IDG.net

Heavy load

Networks moan and groan under intranet burden. **Follows page 36**

The new Web walkers

'net careers offer big bucks, business savvy, blurry job titles. **81**

Online all the time

Experts say Internet addiction is real – and growing. **78**

COMPUTERWORLD

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INSIDE THIS ISSUE

PICKY, PICKY, PICKY
Hiring managers are choosing more carefully to find keepers. Page 4

ENCRYPTION COMPROMISE
U.S. lifts limits on 56-bit exports after months of debate. Page 6

TAKE ME TO YOUR INTRANET
Users see Web posting promise in Microsoft Office beta. Page 14

ERP! Excuse us as we digest our new system

▸ *Ripple effect can hurt customer service*

By Barb Cole-Gomolski
SEATTLE

IF IT'S TAKING longer to get an answer when you call your bank's customer service line, it may be the result of a new enterprise resource planning system.

A lot of companies are installing ERP systems, and that's having a ripple effect on customer service, according to attendees at the International Customer Service Association conference. In fact, during the first six months of an ERP implementation, customer service levels are likely to decline, attendees said.

"We were supposed to be able to do online orders, but [the system is] too slow," said Mary Phillippi, a customer service manager at United Sugars Corp. in Moorhead, Minn., which installed SAP AG's R/3 about 18 months ago.

Phillippi said United Sugars has been unable to process orders fast enough while customers wait on the phone. Because of that, it has resorted to taking orders by hand or fax on paper forms, then typing the information into the system.

The Web will be key to improving customer service over time, experts say.

ERP systems can seem slower than legacy applications because customer service representatives no longer use a stand-alone system. Instead, they access a database that is

ERP, page 100

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Web procurement push

USERS, VENDORS RALLY AROUND EMERGING STANDARD

By Carol Sliwa

AN EMERGING standard for Web procurement will take center stage this week at the Internet Commerce Expo in Los Angeles. That's where major backers plan to demonstrate that Open Buying on the Internet — the industry-defined standard designed to help businesses procure low-cost, high-volume goods online — is finally up and running.

Yet OBI adoption remains slow, as companies either get up to speed with the standard or continue to plot their electronic-commerce strategies, industry observers said.

"The standard has a chance of gaining traction as other organizations see leading adopters like Ford [Motor Co.] implement the [OBI] elements that are viable," said Roy Satterthwaite, an analyst at Gartner Group, Inc. in Stamford, Conn. He said he expects that will take 18 to 24 months.

OBI specifies the process by which buyers gain access to the supplier's catalog, the data structure, purchase order format, transmission mechanism, digital signature scheme and authentication model.

With a more stable OBI 1.1 out since June, OBI proponents finally are ready to show that, through OBI, procurement software on the buyer company's side can interoperate with catalog/processing software on the seller's side.

For buyers, that means they won't have to host supplier catalogs on their intranets. Instead, they can let suppliers maintain the catalogs behind their company firewalls.

So far, however, the limited number of companies that are

Supply chains, page 101

SAPPHIRE '98

Details sketchy on SAP pricing, interface fix

By Craig Stedman
LOS ANGELES

AS IT TRIES TO BE more things to more people, SAP AG is facing up to the need to make big changes in the way its business applications are designed, packaged and priced.

But SAP executives haven't come up with all the answers yet. At the German company's Sapphire '98 conference here last week, many of the promised changes were still grounded more in vision than in reality.

For example, CEO Hasso Plattner said SAP is going back to the drawing board and revamping its whole approach to

SAP, page 100

LOTSA TALK, NOT MUCH ACTION
INFO SECURITY

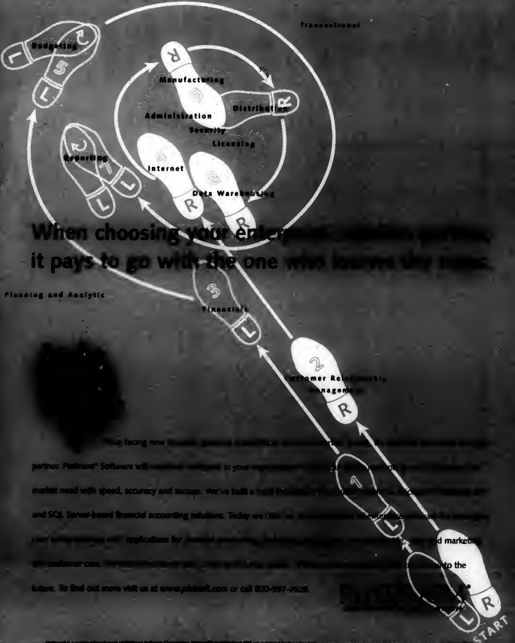
THE DISCONNECT

- **Organizations whose senior managers view information security as "important" or "extremely important": 84%**
- **Organizations that don't have formal security policies: 48%**

Source: Ernst & Young/Computerworld Global Information Security Survey of [illegible] IT and information security managers

The Ernst & Young/*Computerworld* Global Information Security Survey has some alarming news: Most companies fail to take even the most basic steps to protect themselves from hackers, disgruntled employees and industrial spies. And now security has to fight with year 2000 projects for money, reports editor at large Gary H. Anthes. "Y2K is the latest reason not to fund information security," one manager says. Managing, page 70

We're Up to the Future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Planning and Analytic
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[illegible]

Trinity Hospital's Will Weider said ATM is ideal for X-ray machines. **Corporate Strategies, page 45.**

Linux: an operating system with a wistful mascot and a lot of resources. **QuickStudy, page 34**

Service Merchandise's Danny Schunk says good data analysis is helping the company grow. **Software, page 57**

In this issue

NEWS

4 **Mercedes revs up** customer service, combining Web and phone.

6 ***The New York Times* loses** battle with hackers temporarily, takes down site that was under siege.

8 **Microsoft may have killed** Digital's, but it didn't strangle other network computers, analysts say.

10 **Start-up connects** PalmPilot to the 'net, without a PC in between.

16 **Microsoft considers** opening NT code for developers, but only a bit.

QUICKSTUDY

34 **Linux: No one owns** this open-source operating system; that could be its biggest drawback.

OPINION

40 **Users are dancing** as fast as they can and want the tech industry to slow the tempo, Bill Laberis writes.

75 **End users catch** bugs that IT misses, so enlist them in your year 2000 testing ranks, Ed Yourdon advises.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

45 **Hospital upgrades** to ATM, but for medical uses, not technical ones.

45 **Package carriers lead** the way to tight E-commerce integration with customers.

45 **Stock exchange saves** money on Y2K fixes using a disaster-recovery facility.

INTERNET COMMERCE

49 **The Starr report tested** the preparations of news sites, which share their tips for handling a sudden onslaught of traffic.

49 **Home Depot builds** service and management apps with Java, finding it easier without the need for Windows clients.

THE ENTERPRISE NETWORK

51 **Viruses proliferate**, says an annual study, which warns about infected E-mail.

51 **Adapters become** more stable with fail-over features that protect servers.

51 **ManageWise update delivers** LAN control but also disturbing side effects.

SOFTWARE

57 **Service Merchandise bets** on analysis tools to help it get back on its feet.

57 **Connections pose** a challenge to R/3 users linking it with other systems.

57 **Visual Basic improves** compiling, runtime and connections, lacks CORBA.

SERVERS & PCS

61 **Shipping company makes** reps more effective, keeping laptop data up to date.

61 **Research shows** users care more about RAID stability than price.

DATA WAREHOUSING

67 **Data marts promise** good results on top of what your data warehouse does.

67 **Burton Snowboards links** ERP with warehouse and gets a look at future sales.

FEATURES

INTRANETS

Intranets force companies to deal with weak infrastructures they could ignore otherwise. **Follows page 36**

MANAGING

70 **Top management may talk** about security but often doesn't live up to even simple goals, survey finds.

IN DEPTH

78 **Internet addiction garners** lots of attention, but is it for real?

CAREERS

81 **Internet careers carry** low barriers to entry and a lucrative payoff for techies who also are business-savvy.

ETC.

Company index ____ 99
Editorial/Letters ____ 36,44
How to contact CW ____ 99
Inside Lines ____ 102
Stock Ticker ____ 98

EXECUTIVE Briefing

News summary for senior managers

■An astonishing number of companies ignore even the most basic electronic security steps, according to a *Computerworld*/Ernst & Young poll. And the situation is getting worse as users pull money away from security to help with year 2000 repairs. Awareness has increased, but one-third of respondents still identified security as the biggest barrier to electronic commerce. Business unit managers should push for improvements, which can cost as little as $150,000 for a $50 million business, analysts say. But don't forget that hackery isn't the only way to get taken; keep an eye on your accountants, too. Page 70

■Enterprise resource planning systems can hurt customer service for the first six months because they can be slower than stand-alone customer service systems. Customer service staff expect the systems to improve service by giving data to customers through Web browsers, but they still face problems with security and how to tie applications to ERP. Page 1

■Mercedes-Benz is setting up a site that will let customers with questions ask for a call from a service rep. The combination of the Web and the telephone is innovative, analysts say, and shows how a site can provide more than just advertising for hard-goods dealers. Page 4

■Internet-related job titles don't always reflect reality because the jobs change so much. So firms hire by skill set, not title. But the gap between an infrastructure technician and a business-support guru is widening, and the latter is becoming more important. People with both skill sets can practically write their own tickets. Profiles of a webmaster, a business technologist and an electronic-commerce expert show how they got where they are. Page 81

■Microsoft is fencing with the Department of Justice, deflating some of the antitrust charges while losing points on complaints that it pressured Intel, Apple and AOL. And Oracle's Larry Ellison revives the story that Microsoft got Digital to kill a network computer. Analysts say it hardly matters — there are too many other problems with network computers for them to do well. Page 8

■The Starr report on the White House sex scandal burned up the Internet when it was released. Many sites got swamped, but some planned ahead and were able to keep up. Keys included breaking the file into pieces, keeping pages simple, off-loading and serving to secondary machines and making sure the primary Web servers didn't have to query other databases before serving pages. Page 49

■Internet addiction is no joke to some people, whose marriages and lives are disrupted because of it. Whether or not it's a real addiction, it'a a real problem, therapists say. Now it's turning up in businesses, sapping productivity as workers surf compulsively. Page 78

Online this week

Here's the unofficial take on the people who plan, direct and assemble *Computerworld*

Meet the editors

COMPUTERWORLD *www.computerworld.com/more*

Are IT beggars too choosy?

▸ *Picky recruiters seek to curb turnover*

By Barb Cole-Gomolski

IN SPITE of the labor drought, IS departments appear to be getting pickier about whom they hire.

The seeming paradox is the result of efforts to reduce soaring turnover rates. By making the interviewing process more rigorous, information systems managers said they have a better chance of choosing candidates who will stick around.

"We have to do a better job up front of getting to know the candidate," said Tom Felton, vice president of corporate systems at Blockbuster Entertainment Group in Dallas. At Blockbuster, that's done by conducting at least three in-person interviews and administering a logic test to all IS applicants.

In many companies, group interviewing is used to size up applicants' technical abilities and to get a read on what makes them tick. Other organizations are signing workers for short-term contracts before making them job offers.

MORE IS BETTER

Recruiters said clients are casting a wider net by interviewing more applicants before making offers. The goal is to determine whether "this is the kind of person who wants to work here in the long term, or are they just interested in getting experience and moving to the next opportunity," said Joe Krafinski, a senior technical recruiter at Datacom Technology Group, Inc., an information technology placement firm in New York.

A year ago, it was possible for a systems analyst candidate to interview with one technical director and get a job offer. "Now, that same candidate may also have to interview with at least one other IS manager and a group of peers," Krafinski said.

Several staffing managers said the more rigorous screening is helping IS departments find people who fit in better with the existing team. But it's too soon to tell whether the practice will reduce turnover rates, which are hovering around 25% for programmers and analysts at most sites, according to Stamford, Conn.-based Gartner Group, Inc.

THE DOWNSIDE

However, there are some negative side effects to the extra interviews. "It takes longer to get somebody into the position this way," said Keriann Vogel, director of research at Seek Consulting, Inc., an IS staffing and research firm in Wakefield, Mass. While the search is on, existing employees have to pick up the extra work that is created when a job is left unfilled.

Moreover, top candidates are often courted by several companies, so companies that drag the hiring process out too long risk losing recruits to other contenders, Krafinski said.

Elliot Morris, a unemployed software engineer in Fountain Hills, Ariz., sees other drawbacks. "Companies become so picky that you can't get hired," he said.

Morris said he has had several initial phone interviews in which he has been asked a string of technical questions. If you can't answer the questions, you don't get the interview, according to Morris. He has also been subjected to group interviews, which put him off.

"I think companies are missing out on some talented people because they are being too rigid" about their hiring practices, Morris said. □

PRELUDE TO AN OFFER

IS applicants typically go through these steps before getting an offer:

1. **Get screened by human resources, either by telephone or in person***
2. **Pass a technical test that may be administered by HR or IS**
3. **Interview with the IS manager who will be the applicant's boss**
4. **Interview with several members of the IS team with whom the applicant will work**
5. **Interview with another IS manager or members of other IS teams****

**This step is preceded by an interview with a headhunter if the applicant registers with a placement firm*

***Optional at many companies*

Mercedes-Benz uses 'teleweb' technology for luxury service

By Bob Wallace

IN AN INNOVATIVE auto industry effort, Mercedes-Benz is combining call center and Internet technology to provide luxury-class customer service. The so-called "teleweb" technology lets consumers talk to representatives while navigating the company's Web site.

Mercedes-Benz of North America, Inc. in Montvale, N.J., is one of the first companies in the auto industry to use the World Wide Web/telephone technology to give consumers a fast and easy way to have their questions answered without placing a call. Last week, Mercedes-Benz outlined its strategic plans to expand that technology to more areas of its Web site.

The auto industry's Internet sites should move beyond mere advertising and toward a more interactive experience for consumers, said Chris Denove, director of consulting operations at J. D. Power and Associates in Agoura Hills, Calif. "What Mercedes is doing is a perfect step in that direction," Denove said.

The implementation works this way: Consumers who want more information after visiting the frequently asked questions or accessories section of Mercedes-Benz's Web site can key in their telephone number. It is transmitted to the automaker's 45-agent call center, where in a matter of seconds an agent calls the consumer to field additional questions.

Mercedes-Benz raises the bar

Luxury carmaker links its Web site and call center

1. **Consumer logs on to Mercedes-Benz Web site**
2. **Consumer has a question, keys in his telephone number on Web-based form**
3. **Call center agent receives the phone number and calls the consumer**
4. **Agent answers consumer's questions over the phone while they both view the same Web page**

Source: Mercedes-Benz of North America, Inc., Montvale, N.J.

"We're doing anything and everything we can with technology to enhance our relationship with current and potential customers," said William Hurley, manager of new media and relationship marketing at Mercedes-Benz. "The Internet should not preclude use of the phone."

The Web/call center integration is made possible by AT&T Corp.'s Instant Answer software, which resides on the Mercedes server and in AT&T's WorldNet network, Hurley said.

"Teleweb [technology] is definitely appropriate for providing high-touch customer service," said David Cooperstein, an analyst at Forrester Research, Inc. in Cambridge, Mass. "And if you look at the demographics, Mercedes-Benz customers are aggressively online and would benefit."

Mercedes-Benz plans to apply Instant Answer software to the Web site's auto-configuration page. It also plans to tie the call center to the Web site's dealer locator. After finding the closest dealer, consumers will be able to send their telephone number to the dealership and have a sales staffer call back to discuss the availability and price of a particular Mercedes model.

The dealer connection piqued the interest of one Mercedes-Benz dealership executive.

"That's quite an impressive capability," said Wayne Fitkin, MIS director at Fletcher Jones Motor Cars in Newport Beach, Calif. "With the Internet, consumers can see a virtual storefront but don't have a person to talk to.

"What's so unique about this is that I could interact directly with an already interested consumer and find a particular car in a moment or two," he said. □

Push for common Unix drivers

IN THE LATEST attempt to bridge the gap between the various versions of Unix, a group of leading vendors is planning a standard interface that will make it easier to write device drivers for Intel-based Unix servers.

The group includes Intel Corp., Compaq Computer Corp.'s Digital Equipment Corp. subsidiary, IBM, Hewlett-Packard Co., SCO, Inc. and Sun Microsystems, Inc. A reference implementation of the interface framework will be distributed as freeware to the industry, and products that comply with the new specification are expected around the middle of next year.

— Robert L. Scheier

Corrections

The story "An Expanding Universe" in the Sept. 14 special report on enterprise resource planning misidentified the software vendor Atco Rubber Products, Inc. used for financial and distribution management functions. It is Platinum Software Corp. in Irvine, Calif.

A Sept. 7 news story, "FedEx taps software to manage databases," mischaracterized Federal Express Corp.'s daily shipments. FedEx ships 3 million packages per day.

An Aug. 31 Review Center feature, "Analyst Advisory," listed incorrect revenue data for Gartner Group, Inc. Gartner reported 1997 revenue of $511.2 million.

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Feds allow 56-bit encryption

▸ *Change not quite enough for some critics*

By Sharon Gaudin

CORPORATE USERS and industry watchers say the government's easing of encryption regulations last week should mean cheaper and more secure communication with their offices, plants and customers abroad.

After months of wrestling among the Commerce Department, the Federal Bureau of Investigation and the National Security Agency, the Clinton administration changed its encryption policy to allow the export of 56-bit Data Encryption Standard (DES) software.

The change will let multinational companies pass secure information across the Internet or an intranet without splicing together a tangle of U.S.- and foreign-made encryption software or jumping through a series of legal hoops to use the same encryption technology abroad as they do at home.

"We use Lotus Notes, and we've had to use the international version, which has lesser encryption, because of the government's policy," said Hilly Fuchs, assistant vice president of information systems at Continental Grain Co. in New York. "This is definitely something we've wanted. We've been dealing with different levels of security here in the United States and in sites abroad. We want the same level wherever our employees are," he said.

The easing of regulations, however, falls short of what critics from the corporate and software vendor arenas wanted. The policy change still prohibits stronger encryption, such as 128-bit, which has yet to be broken. Two months ago, a group of decryption experts broke in to 56-bit encryption, though that feat is still regarded as difficult.

Jack Grimes, senior vice president of Visa International Service Association in San Francisco, said the U.S. is on the right path, but he added that he needs 128-bit encryption for critical business and financial information.

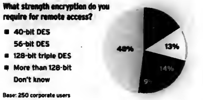
"Fifty-six-bit might be fine for electronic mail, but if you're trying to secure financial transactions, you want the highest level you can get," Grimes said. "All encryption can be broken. It's a matter of making the cost to break the message exceed the value of the information in the message."

U.S. export policy has been focused on limiting the spread of advanced encryption hardware and software. Regulations prohibit the technology from being exported outside U.S. borders, whether by a vendor such as Microsoft Corp. that tries to sell it or by a firm that tries to ship it to international offices, suppliers or buyers.

U.S. law enforcement agencies fear that if strong encryption technology gets into criminal or terrorist hands, it will pose a threat to American lives and the economy because the U.S. government won't be able to crack their communications.

Although a U.S. company could buy encryption software from a company in another country and distribute it throughout its supply and sales network, such encryption software is generally considered too weak to bother with. ☐

What strength encryption do you require for remote access?



Base: 250 corporate users

Source: Cahners In-Stat Group, Newton, Mass.

& Now that you can encrypt, just do it, Frank Hayes writes. Page 12

Hackers disrupt *N.Y. Times* site

By Sharon Gaudin

IS ADMINISTRATORS at the *The New York Times* were left scrambling all last week after a hard-hitting hacker attack that reminded news organizations that posting information online puts their credibility on the line.

"Obviously, anything that's a liability to the credibility of our information is of tremendous concern to us," said Rich Meislin, editor in chief at The New York Times Electronic Media Co. in New York. "It's unnerving when something like this happens. Any provider of credible information on the Internet has to be concerned. It's a threat to everybody."

Matthew Kovar, an analyst at The Yankee Group in Boston, said he doesn't believe that most news organizations — or most companies — are on top of their online security. He added that this incident was a good wake-up call.

"They're just not prepared," he said. "Reporting the news and getting it online in a timely fashion is the first priority. A newspaper's credibility in one medium doesn't necessarily translate into another if you don't have effective security."

On Sunday, Sept. 13, *The New York Times* had to shut down its World Wide Web site for nine hours after unsuccessfully battling for control of the site with a group of hackers. The hackers replaced the newspaper's home page with pornographic pictures, obscenities and threats targeted at *Times* reporter John Markoff, who has covered computer hackers and published a book about it, *Take Down*.

A group calling itself Hackers for Girlies claimed responsibility for the attack. The FBI is investigating.

Four days later, the *Times* still didn't have its complete Web site back online. Forums, classifieds, archives and the site's search engine were still down while an information systems team tried to clean up the site and secure it.

Meislin wouldn't specify the security measures the hackers broke through or what kind of changes are being made.

MONEY MAKES IT WORSE

But as much as news organizations have to worry about hackers changing stories and raising libel issues, it isn't the same as a financial institution having to protect people's finances, said Greg Cline, an analyst at Cahners In-Stat Group in Newton, Mass. "Hacking into news organizations is generally done as a prank," Cline said. "Financial organizations are most vulnerable, and they have the highest fiduciary duty to protect their Web sites."

Chris Jennewein, vice president of technology and operations at Knight-Ridder New Media in San Jose, Calif., said the *New York Times* attack was a good reminder, but he has been more than aware of the potential for trouble.

"We've reviewed our security procedures [after last week], but we haven't decided to make any changes," Jennewein said. "We're always aware of security and credibility. Even on the print — even though we don't worry about hackers per se — we have to worry about accuracy. It's a natural transition."

Knight-Ridder has 40 newspapers online, including *The Miami Herald* and the *San Jose Mercury News*.

Scott Woelfel, editor in chief at CNN Interactive in Atlanta, said that because it is one of the most visible sites on the Web, staffers have learned to be cautious. And so far, the site hasn't been hacked.

Hackers tend to be visible, going for the splashy show instead of changing a quote or a number, Woelfel said.

Paul Grabowicz, coordinator of the New Media Program at the University of California at Berkeley Graduate School of Journalism, agreed.

"One thing about hackers is that they're not subtle," he said. "And people aren't fools. When they see hack jobs, they're not likely to assume the people at *The New York Times* lost their sanity for a day." ☐

Staff writer Nancy Dillon contributed to this story.

Tandem to run on Alpha chip

By April Jacobs

COMPAQ COMPUTER CORP. will move its highest-end Tandem Himalaya servers to the Digital Alpha chip in 2001 in a move designed to reassure large enterprise users of the systems.

The announcement marries two technology families acquired by Compaq in the past year: Tandem Computers, Inc.'s Himalaya S series servers used by financial institutions and telephone carriers, which were designed to keep working if components fail; and Digital Equipment Corp.'s 64-bit Alpha processor line.

Compaq officials said the move is intended to allay concerns users may have about the future of the Mips Technologies, Inc. processor now powering the Himalaya servers. The Mips processor, once used by several computer makers, is a leading chip architecture for consumer appliances and video games. Silicon Graphics, Inc. retains a majority stake in Mips.

Pauline Nist, vice president and general manager at the Tandem division of Compaq, said Compaq and Tandem are assuring Himalaya users considering migration plans that upgrading to Alpha-based servers won't require changes.

Tandem migrated its Himalaya users from its proprietary RISC chip to Mips in 1991.

That migration was smooth because Tandem provided a way for its users to keep their current applications running.

It worked so well, according to Nist, that about 60% of Tandem's users are still running their original application code.

"We are going to commit to doing the same thing this time around," Nist said.

Himalaya with Alpha will have all the same features, Nist said. The company's three-year time frame for release is based on the fact that the next-generation EV7 Alpha chip isn't slated for release until 2000.

Ed Schaider, an analyst at The Standish Group International, Inc. in Dennis, Mass., said Tandem users would benefit from the vendor's experience in changing processor types.

Then there's the performance of the chips slated for the Himalaya. "When we look at the performance category, Alpha is the undefeated heavyweight champion," he said. ☐

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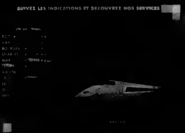

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▸ *Already-delayed trial pushed back to Oct. 15*

ANTITRUST TRIAL

By Stewart Deck

IT'S THE antitrust cha-cha. For every step toward an actual trial taken by the Department of Justice in its antitrust case against Microsoft Corp., it seems to take a step sideways and, at times, half a step backward.

Even so, the parameters of the trial — which originally was set to begin Sept. 8 — are slowly coming into focus as the battle lines are becoming more clear. In a flurry of decisions last week, U.S. District Judge Thomas Penfield Jackson denied Microsoft's request to dismiss the suit, pushed back the trial date three weeks, trimmed a piece of the states' portion of the DOJ case against the industry giant and declined — for now — to limit the government's case.

Jackson did agree to dismiss a claim that Microsoft had tried "to foreclose competition" in Internet browsers.

Both sides had requested a delay to continue preparing for the trial, which Jackson rescheduled to Oct. 15 from Sept. 23. In a 56-page ruling, Jackson denied Microsoft's request to dismiss the case. He said that there were "many material issues of fact genuinely in dispute," including whether Microsoft was a monopolist and had used such status in illegal ways. The judge also nixed Microsoft's argument that Windows was protected from state antitrust laws because it had a federal copyright. "A copyright does not give its holder immunity from laws of general applicability, including antitrust laws," Jackson wrote.

Microsoft then requested that the case be delayed further and asked that the DOJ's case be limited. The Department of Justice wants to introduce additional evidence from Microsoft's MS-DOS operating system days, but Microsoft argued that was already covered in the 1995 consent decree settlement it signed with the DOJ.

Microsoft also tried unsuccessfully to limit evidence about pressure it allegedly applied to Intel Corp., Apple Computer, Inc. and RealNetworks, Inc. on various business dealings.

Most recently, America Online, Inc. CEO Steve Case popped up to support a DOJ allegation that Microsoft violated antitrust law in its dealings with America Online. Microsoft supposedly used its operating system influence to get America Online to make Microsoft's Internet Explorer the default Internet browser for its users.

Case said last week that although other browsers were comparable, he agreed to the deal for preferential placement in the Windows 95 desktop and because the browser was free.

One legal expert said Microsoft has solid grounds for its requests. "I think Microsoft is right in basically saying, 'We've been working like crazy to meet unrealistic deadlines. Now all of a sudden we're being surprised by additional allegations,' " said Marc Schildkraut, a former antitrust attorney at the Federal Trade Commission and now a partner at Howrey & Simon, a Washington law firm.

Microsoft did win one, however, when Jackson agreed to dismiss the states' claim that the company used its monopoly power in operating systems "to foreclose competition" in Internet browsers. The Supreme Court has upheld similar charges "only when [a company] actually monopolizes or dangerously threatens to do so," Jackson wrote. Microsoft officials last week claimed that the company had never tampered with evidence requested for the case.

"The government has never alleged that Microsoft has destroyed any documents or withheld any information that it was required to provide," said Microsoft spokesman Mark Murray, responding to reports that the government was looking into these issues. "Obviously we are in daily contact with the government, and they have never indicated to us that they are looking at these groundless allegations," Murray said.

Officials at the DOJ declined to discuss the matter.☐

Gates' NC role is debated anew

By Kim S. Nash and April Jacobs

A REPORT OF Microsoft Corp. CEO Bill Gates pressuring Digital Equipment Corp. to drop a network computer project because it didn't support Microsoft technologies isn't new.

The tale appeared in several reports from industry newsletters late last year and early this year.

But in his own recent retelling, Oracle Corp. CEO Larry Ellison managed to fan the flames against Microsoft just as the government last week revealed it was investigating similar charges of Microsoft intimidation of other vendors, such as Intel Corp.

While some pundits talk about what might have been had Digital gone ahead with its "Shark" network computer, cynics suggest that Ellison is looking to explain why the network computer hasn't been a barn burner. Despite its well-known resistance to the concept, Microsoft isn't solely to blame for disappointing network computer sales, analysts said.

There are plenty of other problems facing the network computer, including overselling of the concept and unforeseen technical hurdles, they said.

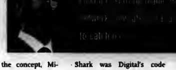
For example, part of network computers' appeal is that they are cheaper than PCs, mainly because they lack local storage and other expensive add-ons. But because network computers can't store much software, they require fast, high-capacity networks to serve the software to users.

That, for many customers, is a stumbling block.

SLIM CHANCE

Even if Digital didn't drop its Shark project — which Ellison and other sources claim happened after tense talks with an unhappy Gates — network computers probably wouldn't have taken off more than they have, said Kevin Knox, an analyst at Gartner Group, Inc. in Stamford, Conn.

Microsoft declined to comment, other than to say that it and Digital, which is now owned by Compaq Computer Corp., have a "great relationship."



Shark was Digital's code name for hardware built to specifications created by the anti-Microsoft contingent of Oracle, Sun Microsystems, Inc. and others. Today, Digital supports Microsoft's thin-client specification.

"There are some pretty big names [still selling network computers] anyway, so I don't know if the Digital/Oracle combination would have had much effect," Knox said.

Some users initially intrigued by the network computer concept have since backed off.

Federal Express Corp. in Memphis originally planned to install hundreds of Sun's JavaStation network computers. But as the price of beefy PCs dropped to about $1,000, FedEx early this year decided to stick with PCs and continue to test network computers for the next few years [CW, Feb. 23].

Ellison's overzealous sales talk also has contributed to disappointment with network computers, said Eileen O'Brien, an analyst at International Data Corp., a sister company to *Computerworld*, in Framingham, Mass.☐

Feature-rich IBM router to make debut

By Bob Wallace

USERS STAND to gain sorely needed versatility in one branch office box with IBM's introduction this week of a feature-rich router, the first to let remote sites boot up thin clients.

The Access Utility promises to speed the booting process by handling it locally rather than requiring companies to send 4M-byte-plus images to remote sites over expensive and narrow wide-area network links.

The product was designed to handle all the networking needs of branch offices. It has traditional router features as well as virtual private network (VPN) and remote access functionalities. And voice support is planned.

"All this functionality has not been available in a single box," said John Morency, vice president at Renaissance Worldwide, Inc., a Newton, Mass.-based consulting and research firm. "And their thin-client support is a first for branch office routers."

At a branch office, IBM Network Stations will receive boot images from the hard disk in the Access Utility.

'GREAT' CONCEPT

"The concept sounds great if it works out," said Sam Metwaly, information systems director at Rainbow Apparel Cos. in New York. Metwaly said he is looking for a versatile remote office networking device for his remote sites, which will use IBM thin clients. Having a wealth of features in one router "would, of course, be much easier than working with multiple boxes," he said.

The Access Utility is the preferred offering for booting network stations at remote sites, an IBM spokesman said. In the meantime, IBM has been providing flash cards to some users to perform that task. The cards can be inserted into a thin client to assist in booting up.

The all-in-one box is also the first IBM device to support features needed for VPNs, including the Layer 2 Tunneling Protocol for creating links over the Internet and IPSec encryption, which provides data security.

The Access Utility router will cost $6,700 and will ship on Nov. 13.☐

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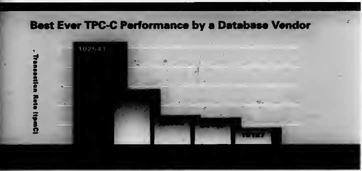

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Software to link handhelds to intranet apps

By Matt Hamblen

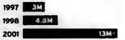
BUSINESS USERS have been hankering for ways to get their handheld computers to provide more than just personal calendars and contact information. Now, new technology could bring the corporate intranet right into users' hands.

This week, AvantGo, Inc. in San Mateo, Calif., plans to announce a server that connects 3Com Corp.'s PalmPilot and Windows CE devices to corporate databases via a synchronization kiosk or wireless device without the need for a PC in between. Server-based software will help companies administer hundreds of handheld devices and synchronize World Wide Web-based forms on company intranets tailored to fit handhelds, users and analysts said.

David Hendrie, manager of engineering automation at Consolidated Edison Company of New York, Inc., is putting the server through a trial run with 20 handhelds and plans to expand it to more than 2,000 technicians who inspect electrical lines throughout the city.

"Our technicians go out to inspect manholes, and the current plans are to use $4,000 ruggedized devices, but I'd like to replace them with PalmPilots," Hendrie said. "Instead of carrying a 10-pound thing, they can slip that little PalmPilot that costs $300 to $500 in their pocket."

Worldwide handheld devices market



**Projected*

Source: International Data Corp., Framingham, Mass.

He envisions technicians arriving each day to retrieve handhelds, which would hold new data about the workday picked up from synchronization kiosks. The handhelds would be loaded with questions pulled from a Web-based application on the Con Edison intranet such as, "Is the circuit worn?" The company would generate routine maintenance requests using the collected data.

COST-EFFECTIVE OPTION

The savings on thousands of ruggedized handhelds would more than pay for the AvantGo 2.0 server, which is priced at $30,000 for 100 users, Hendrie said.

Another user, Chris Cawein, manager of business systems support at Federal Express Corp. in Memphis, said dozens of FedEx managers are testing AvantGo 2.0 for downloading information from the corporate intranet. They are tracking corporate information several times a day, such as how many packages were processed and how many flights were late, he said.

"This kind of software makes a PalmPilot a much more useful tool," Cawein said. The PalmPilot is already useful for calendar and contacts, he said, "but this kind of information makes it a business tool and not just a personal tool."

Analysts said the AvantGo software and future imitators of the server will play an important role in distributing corporate information.

Jill House, an analyst at International Data Corp. in Framingham, Mass., a sister company to *Computerworld*, said the AvantGo product will "begin to plug up a significant hole for enterprise handheld users. It will help create more enterprise applications and deployments as it makes handhelds more enterprise-friendly."

Analysts said no other software yet equals what AvantGo is providing for both the PalmPilot and Windows CE platforms, although Windows CE provides some of the same abilities.

Oracle Corp. recently announced that it is providing this capability for PalmPilot users who have access to Oracle databases. □

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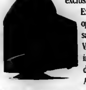

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FRANKLY SPEAKING

The feds crack the code

FRANK HAYES

What the heck is going on here? Two months ago on Wednesday, July 15, a group of encryption crackers broke one of the most widely used systems for scrambling data.

Broke it? Let's rephrase that. The government-approved 56-bit Data Encryption Standard (DES) was demolished, obliterated, blown sky-high. A team from the Electronic Freedom Foundation (EFF) built a not-very-hard-to-build computer that can crack a 56-bit DES cipher in a few days.

But that isn't what's so bewildering. What's truly shocking is that it took only nine weeks — until Wednesday, Sept. 16 — for the government to get the message and change its encryption policies.

For Washington, that's blisteringly fast — you can practically hear the sonic boom.

Last Wednesday, the U.S. Commerce Department announced that it is eliminating most export restrictions on software that includes 56-bit DES encryption. No longer will vendors have to jump through hoops to send abroad the same software — Lotus Notes, Netscape Navigator, Microsoft Internet Explorer — they sell in the U.S.

It's your turn to get the message: Start encrypting – now.

More important, the new policy wipes out a lot of complexity for IS shops of multinational corporations — or those with business partners in other countries. Now those users won't have to choose between 40-bit "international" encryption and "U.S.-only" encryption. And IS implementors won't have to go to a non-U.S. supplier or kludge together a clunky home-brew encryption scheme.

Of course, the downside is that the newly liberated crypto is exactly the stuff the EFF crackers broke. It isn't the much-stronger 128-bit encryption that some lawmakers and lobbyists want to make freely exportable. But even wimpy, breakable 56-bit DES encryption is better than nothing. And *nothing* is exactly what protects most corporate data today.

And it's still stunning that, in the midst of a sex scandal, an international financial crisis and a stock-market nosedive, Your Tax Dollars at Work managed to read the unencrypted writing on the wall and loosen the crypto rules in Internet time, not Washington time.

Wonder exactly *how* that's possible? Here's a clue: When the White House and Congress are obsessed with other things, cabinet members have a lot more flexibility to cut their own deals and make things happen. And Commerce Secretary William Daley — son of the late Richard J. Daley, boss of the infamous Chicago political machine — certainly knows how to cut a deal.

The Commerce Department has been fighting the FBI and the National Security Agency for years to loosen encryption restrictions. The victory this time may be small, but it sends the right message: Encryption is good business.

So it's your turn to get the message: Start encrypting — now.

Encrypt your users' E-mail. They're negotiating deals, making plans and exchanging confidential information with business partners. That's useful business intelligence to any competitor or industrial spy. Without encryption, the message can be read in seconds by anyone sniffing the network. Encrypt it.

Encrypt files on every laptop so corporate information won't be easy pickings if the machine is stolen at an airport X-ray machine. Encrypt files on desktop PCs, too, and any computer where a visitor might gain access in a few moments alone at the keyboard.

Sure, it'll take time, effort and maybe some hired expertise to give your users and data a measure of security. But encryption is cheap insurance against thieves, hackers and industrial spies. And remember, it took the federal government only two months to figure out that encryption is good business.

How long will it take you? ☐

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

SHORTS

HP to trim global staff

Hewlett-Packard Co. will reduce its global workforce as part of its ongoing cost-cutting efforts, but the total number of reductions hasn't been determined, a spokesman for the Palo Alto, Calif.-based company confirmed last week. Although HP won't hand out pink slips, it will use relocation and voluntary severance to reduce its staff, spokesman Brad Whitworth said.

Raytheon considers outsourcing

Raytheon Co. is considering outsourcing several of its information technology areas, including data center operations, desktop management, E-mail services and its help desk. Jim Infinger, vice president and chief information officer at the Lexington, Mass.-based company, said he is looking at outsourcing areas that "make sense, but we're not going to outsource major portions of IT," such as engineering. Infinger said Raytheon's Hughes Electronics unit outsourced all of its IT before a 1997 merger. A decision to outsource won't be made before the end of the year.

Oracle boosts Java

Oracle Corp. last week formally unveiled the latest edition of its flagship database, Oracle8i. CEO Larry Ellison declared that the industry is moving from the "dead end" of client/server computing to its "final evolutionary stage" of Internet computing, with Oracle8i as the first Internet database. The product's Java capabilities [CW, Sept. 7] should "further embed Java as an alternative programming language for developers and make it more useful to organizations," said Brian Murphy, an analyst at The Yankee Group in Boston.

Domain deal approved

Two key groups overseeing Internet issues agreed to a compromise proposal for a new international body to govern domain names and numbers. The U.S. government in June decided to relinquish control on Sept. 30. The proposal was hammered out by the Internet Assigned Numbers Authority and Network Solutions, Inc. in Herndon, Va., which holds the federal contract for registering domain names. More information is at *www.iana.org/intro-coop.html* or *http://netsol.com/policy/icann.*

EDS opens year 2000 database

Electronic Data Systems Corp. in Plano, Texas, last week opened up to the public a database that describes the year 2000 compliance status of 129,000 technology products from 3,400 vendors. The searchable database, located at *www.eds.com/vendor2000*, was previously available only to EDS customers. White House aide John Koskinen said the EDS site complements the government's push to encourage information sharing among users and vendors.

Web video to improve

RealNetworks, Inc. in Seattle is licensing technology from Intel Corp. for the next version of its RealSystem G2 software, which is due out next month. That technology, called Intel Streaming Web Video, lets sites encode live video for Web broadcast at four speeds on a single 400-MHz Pentium II system. With current technology, four separate systems are needed. The companies said Intel's technology also will boost streaming video decoding performance, improving Web video quality.

CONTRACT OF THE WEEK

Customer: Korean Air, Seoul
Prime contractor: IBM
Terms: $400 million, 10 years
Highlights: The information technology outsourcing deal covers operation of all of the airline's computer systems, global network, electronic-commerce and business recovery services. The goal is to make Korean Air more competitive and improve customer service.

It's official: MCI WorldCom, Inc.

WorldCom, Inc. and MCI Communications Corp. last week officially closed their $40 billion merger, following approval by the Federal Communications Commission. The new MCI WorldCom, Inc., based in Jackson, Miss., will offer an expanded range of data, Internet, local and international services over its infrastructure, which could lead to attractive pricing for corporate customers, analysts said.

SHORT TAKES **Intergraph Corp.** requested a summary judgment in its patent infringement suit against **Intel Corp.** regarding technology used in Pentium chips. . . . A consortium of storage industry vendors has announced a next-generation version of SCSI called Ultra 160/m SCSI, which can handle 160M byte/sec. transfer rates, or double that of its predecessor. . . . **Fujitsu Software Corp.**, in San Jose, Calif., announced the ByeDesk Line of server software, which enables the wireless transmission of intranet data to pagers, phones and handheld devices. Pricing starts at $3,495. . . . **Netscape Communications Corp.** last week released a so-called "Windows-friendly" beta version of its Communicator 4.5 groupware/browser suite.

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Office 2000 suite opens the door to Web postings

By David Orenstein

AFTER MORE than a month in beta testing, Microsoft Corp.'s Office 2000 suite strikes users as a rich and promising tool for letting employees post information on corporate intranets and World Wide Web sites.

Documents can be posted directly to the Web server from within Microsoft Word, the suite's word-processing program.

They can also be put back into Word for editing — without the end user ever realizing that the document is in the Web's Hypertext Markup Language format.

Organizations with pent-up demand or with a zeal for the Internet will likely be the earliest customers for the suite, said Mary Wardley, an analyst at International Data Corp. in Framingham, Mass., a company affiliated with *Computerworld*.

"Those [users] that skipped the last round will jump on this one. Those that upgraded last time may wait and see a little longer," Wardley said. "It depends a lot on where the organization is with their embracing of the Web and Web technologies."

That Web publishing capability will make a big difference at the California Department of General Services in Sacramento, said Web technology engineer Jamie Mangrum. The agency is testing Office 2000 and deploying an intranet to 3,000 users.

With Office 2000, the human resources department will be able to post job listings on the intranet on its own, for example, thus freeing the information systems department to deal with other issues, Mangrum said. Previously, the IS department had written a custom ActiveX program to simplify the task of Web posting for end users.

Mangrum said he hopes to distribute a second beta version widely and then upgrade to Office 2000 soon after it is released commercially. The suite is expected to be available early next year at a price similar to that of Office 97.

BUG SHY

Although Mangrum and other users said the suite doesn't seem buggy, Shawn Myron, a financial systems analyst at wireless communications provider BCTel Mobility in Barnaby, British Columbia, said his company will wait to upgrade because it wants to be sure it isn't caught with any bugs.

Nevertheless, Myron said he welcomes the ability to post Access and Excel reports and tables to Web servers, which will give BCTel's end users a Web front end to corporate data.

Beta testers and Office users who are less interested in Web publishing aren't as enthusiastic about the new version. Dan Joaquin, vice president of information technology architecture and engineering solutions at clothing retailer Gap, Inc. in San Francisco, said there is no compelling reason to upgrade to Office 2000 yet.□

What's in Office 2000:

In beta since Aug. 10, Office 2000 will include Word, Excel, Outlook, Access and PowerPoint. A high-end version will include FrontPage. Users will be able to:

- **Save and edit any Office document on a Web server**
- **Access and analyze back-end data**
- **Detect and repair problems in important system files**

RoboMon update helps cut staffing needs

▸ *Version 7.0 automates disk space monitoring*

By Cynthia Bournellis

IF IT DEPARTMENTS could clone their Windows NT managers, what a better world information technology would be. The latest version of RoboMon 7.0 for Windows NT, from Heroix Corp. in Newton, Mass., comes closer to achieving that fantasy by making the systems administration and management process across an entire enterprise more automatic.

But more automation doesn't take into account unexpected problems that could occur, such as unsuccessful implementations, cautioned Philip Mendoza, an analyst at Framingham, Mass.-based International Data Corp., a *Computerworld* sister company.

Still, the new features in RoboMon 7.0 (see chart below) will save Sunterra Resorts $100,000 annually as it begins to deploy a new server farm. The vacation time-share company in Orlando, Fla., has an IT staff of 100. Adding more personnel to manage the 14-system server farm, which will grow to 80 servers by the end of next year, isn't part of IT's goals.

With RoboMon, "I can have 80 servers out there, and I don't have to devote one to three people more to monitor them," said Mike Westerfield, a systems engineer at Sunterra Resorts.

The company installed the predecessor to Version 7.1, RoboMon 6.4A, two months ago on the 14 servers that use Citrix Corp.'s Winframe thin-client server software. Westerfield said the systems have yet to crash, thanks to RoboMon's ability to notify IT managers of problems before they occur. Before installing RoboMon, Westerfield said he spent weeks troubleshooting problems on the company's Microsoft Corp. Exchange Server network, which kept crashing at 1 a.m. each day because of a process that hogged available memory.

Westerfield stumbled upon RoboMon 6.4A while surfing the Internet for software tools to support the server farm. "We thought, 'Man, we can't possibly monitor 80 servers [with a few people].'" Westerfield said. He said RoboMon has reduced the three-week troubleshooting process to virtually nil.

"It's pretty much a done deal that we will upgrade to 7.0," he added.

Interealty Corp., a company that hosts Web sites for brokers and real estate agents in Vienna, Va., plans to reduce labor on specific tasks by using RoboMoo. Interealty relies on three IT staffers to manage a Windows NT network of 40 servers.

"RoboMon reduces the amount of manual work [we have to do], so we can work on more pressing things," said Todd Wallace, an NT systems administrator. Those functions include automatic reporting and tracking software versions.□

New features in Heroix's RoboMon 7.0

- **Remote installations can be done via template, which "pushes" the software to other machines**
- **Dispatching rules is more automatic**
- **Variables that contain thresholds, such as CPU capacity, are automatic**
- **Drag-and-drop operations were added so changes can be sent to multiple servers**

Cluster server supports 32 servers

By Nancy Dillon

MOUNTAIN VIEW, Calif.-based Veritas Software Corp. is trying to change users' negative perception of server clustering.

The perception is that clusters consist of two nodes with a shared disk in which half of the server resources sit idly by waiting for fail-over — a proposition that can almost double hardware costs.

32 SERVERS

But Veritas' Cluster Server, due this week, will allow the clustering of 32 servers. That means one idle server could support 31 others as a fail-over device. Or extra resources spread across a few nodes could shore up the cluster, with users specifying the path for both initial and consecutive fail-overs.

The software also supports storage-area networks (SAN), so 32 clustered servers could connect with a storage pool through a Fibre Channel switch.

"Microsoft's Cluster Server has been positioned as the Holy Grail of continuous operations, but this is not true," said Michael Peterson, an analyst at Strategic Research Corp., a market researcher in Santa Barbara, Calif.

"At best, it will only get you to 99% availability. To get 100%, you have to pay attention to data access, data protection and disaster tolerance. You do this with SANs, RAID and remote mirroring," he said.

Petersoo said Veritas' new clustering software is the first to support storage on Fibre Channel SANs.

Cluster Server costs $6,000 per Solaris node. Windows NT and HP-UX support is due next year. A Veritas product called FirstWatch is the predecessor to Cluster Server, but it supports only five nodes.

Other clustering products include Microsoft Corp.'s Cluster Server, FullTime Server from San Mateo, Calif.-based FullTime Software, Inc. and Standby Server from Orem, Utah-based Vinca Corp.□

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NT source code to be made available in snippets

▸ *Ballmer: Win NT 5.0 out in 8 to 12 months*

By David Orenstein and Sharon Gaudin

MICROSOFT CORP. President Steve Ballmer is never going to throw the source code of Windows NT wide open, but, at the behest of developers, he plans to open Windows more than just a crack.

Specifically, Ballmer said Microsoft will weigh requests for opening specific segments of code based on whether doing so will help developers.

Although many Windows applications run smoothly on top of the operating system with nothing more than the standard application programming interfaces between them, many users said they would appreciate the option of being able to tinker with NT when necessary to hook in what Microsoft didn't anticipate.

Developers working on device drivers, security or proprietary hardware have been stymied by NT's "black-box" impenetrability. Most major commercial Unix operating systems aren't open source either.

But Peter Kapur, vice president at BTNY Services, Inc., a unit of Bankers Trust Co. in Jersey City, N.J., said he would like more NT code to be open so that his developers could write custom code that would hook proprietary or incompatible software into NT.

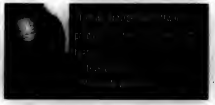
In the past, the bank has had trouble achieving the interoperability it needs.

Jim Stickney, senior software engineer at terminal emulation software maker WRQ, Inc. in Seattle, said that as a for-profit company, Microsoft isn't obligated to release source code, but doing so certainly would benefit developers. "There are definitely people who are hamstrung," he said.

DEVELOPER NEED

Kyle D. Mossman, a senior applications analyst at Alaska Airlines in Seattle, said he sees no immediate need for a more open NT. "We've never had to delve down that low," he said. "I wouldn't say it would make any difference."

Ballmer said developer need will be the criterion Microsoft uses to determine what to release. Speaking at Microsoft's Business Applications Conference in Las Vegas earlier this month, Ballmer said the technical flexibility that open source code gives developers has been the reason why initiatives such as Netscape Communication Corp.'s release of Mozilla and IBM's embrace of the Apache Web server have become more popular. To open NT entirely, however, would be to give it away.



"Can we provide our software products for free? The answer to that is no," Ballmer told an audience of 3,000 developers. But releases of small, helpful snippets are becoming more common at Microsoft, he said. "We've done more of that than we ever have in the past. We're looking at that more and more. I do think there really is a customer desire represented there."

And Ballmer wasn't making promises only about NT's source code last week. He also said Version 5.0 is about eight to 12 months away. That's the closest anyone at Microsoft has publicly come to giving NT 5.0 an official ship date.

Microsoft has been noticeably mum on announcing a ship date but has repeatedly pushed back beta releases and has had the project on the drawing board for more than two years.

But Jeff Price, Microsoft's lead product manager for Windows NT Server, didn't confirm Ballmer's statement. Price said no ship date has been tagged on NT 5.0 and he isn't sure where last week's statement came from. "We're not shooting for a particular date but for a particular level of quality," Price said.

Meanwhile, Bob Herbold, Microsoft's chief operating officer, told a group of investors at a San Francisco conference that there may or may not be a third beta release even though one has been officially announced — without a release date.

Herbold also said in a different speech last week that if a third beta is released, it will likely be by the middle of next year.

Price backpedaled from that statement, as well.

He said a third beta definitely is in the works and a release date for that is dependent on users' reaction to Beta 2 and how quickly adjustments can be made to that.

"Beta testers are just getting [Beta 2] up and running on their systems," Price said. "It really isn't possible to pick a date at this point."

Bill Peterson, an analyst at International Data Corp., a sister company to *Computerworld*, said he has been told that a third beta is in the works. He wouldn't guess the time frame. ☐

Intel announces aggressive product strategy

By April Jacobs

AMID LEGAL CHALLENGES, stiffer competition and lower-than-expected demand for PCs, Intel Corp. laid out plans at its developer forum in California last week to forge ahead next year with a mix of processors aimed at a diverse and highly segmented PC market and a focus on making PCs easier to manage.

Speaking at the forum, Intel President and CEO Craig Barrett described next year as "the most intensive year for product announcements that we've seen for some time."

Intel's strategy holds promise for both corporate end users and the Santa Clara, Calif., chip maker itself, observers said.

"This is a definite, deliberate move on their part to broaden their market, because the market segmentation is growing," said Mel Thomsen, an analyst at MicroDesign Resources in Sunnyvale Calif.

With last week's announcement, Intel is indicating that it is moving toward offering a diverse and wide range of processors — from relatively low-cost Celerons to high-end Xeon chips aimed at power users.

The company has been moving toward that model for a few years, but it is only in the past year that it has committed to several types of chips for different markets, choosing not to rely solely on the plain-Jane Pentium to be its bread and butter.

Upcoming 1999 announcements from Intel:

- **Pentium processor with MMX technology for mobile computers in first half of 1999**
- **"Katmai"-enhanced multimedia/graphics processor due in first quarter 1999, with clock speeds of 450 MHz and 500 MHz**
- **"Coppermine" for desktop and mobile PCs based on 0.18 micron technology due in the second half of 1999**

Industry observers say Intel's ignorance of the low-end market was a critical misstep. When strong sales made it apparent that the low-end PC would be a market force, competitors carved out market share, but Intel came late with a cache-less Celeron offering this spring.

And in trying to reach its goal of becoming a high-end provider, the company has come to realize that a one-size-fits-all chip just won't do the trick, Thomsen said.

"The real benefit for users is that when you develop and build products for specific applications, they perform better, and your customers can choose what they want," Thomsen said. For corporate end users, that means chips aimed at everything from mobile devices to low-end computers and high-end workstations.

"The way chips are going to go, people can get the processor power specific for their application," said Larry Garden, manager of technical services at Brewers Retail, Inc. in Mississauga, Ontario. "With customized chips, you can get the power in the price range you want."

GOOD NEWS, BAD NEWS

In other words, administrative workers could get low-end PCs that would run word processing and light spreadsheet-type applications just fine, and companies could aim more dollars at high-end users' machines when necessary.

But users also point out that too much of anything isn't a good thing. Companies will still need to stick to the idea of standardizing desktops as much as possible to avoid the support issues that come with having a plethora of hardware platforms.

"For high-end users — those of us who need the flexibility and performance — this will be good. But giving people too many choices might not be [good] for the people who have to support all that," said John Delta, director of advanced technology at the Nasdaq Stock Market, Inc. in Trumbull, Conn.

Intel is moving toward offering a diverse and wide range of processors – from relatively low-cost Celerons to high-end Xeon chips aimed at power users.

The newest portion of the Intel chip lineup, code-named Katmai, is aimed at high-end users and is due in the first quarter of next year.

It was designed to offer enhanced multimedia and better performance for graphics-intensive applications.

Intel will also deliver faster 366-MHz Celeron processors with integrated cache aimed at both low-end desktops and mobile computers.

The company will bolster its Pentium II Xeon processor lineup with a 1M-byte cache offering in the first quarter of next year. ☐

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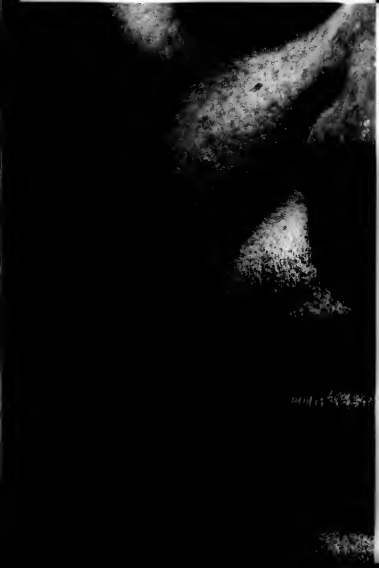

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WHAT'S ON CHARLES SCHWAB'S MIND?

WHAT'S NOT?

PEOPLE Soft

SAP firms up post-R/3 plans

By Craig Stedman
LOS ANGELES

PACKAGE STATUS

Shipment plans for SAP's new applications

PRODUCT	AVAILABILITY
Business Information Warehouse *Data warehousing*	Now
Advanced Planner & Optimizer *Supply-chain planning*	Limited shipments now; general release due in December
SAP Focus *Sales, marketing and field service*	Limited shipments of sales-force software in Q4
Business-to-Business Procurement *Internet-based procurement*	Limited shipments due in December
Logistics Execution System *Warehouse and transportation management*	Limited shipments due in Q4

SAP AG is starting to deliver on its promise to extend beyond the realm of R/3. But don't expect it to start selling scads of software to non-R/3 users any time soon.

At SAP's Sapphire '98 user conference here last week, as expected, the spotlight was on new applications that go beyond corporate back offices (CW, Aug. 31). For example, SAP released data warehousing software, began limited shipments of a supply-chain planning package and announced plans for standalone marketing, sales and field service applications (see chart).

The new applications can be used apart from R/3, and SAP CEO Hasso Plattner said they have to sink or swim on their own technical merits. SAP's developers were told that products that aren't deemed to be among the top three in their categories in three years will be dropped, Plattner added.

Given SAP's clout, there isn't much reason to doubt it can be successful in each of the new businesses, users and analysts at Sapphire said. But most of the interest is expected to come from companies devoted to R/3, they added. And the new products still need time to evolve.

For example, Procter & Gamble Co. worked jointly with SAP to develop custom supply-chain planning software that's scheduled to go live in January and remain in use until SAP's packaged Advanced Planner & Optimizer (APO) gets bulked up with additional demand-planning and capacity-leveling features.

Richard Clark, global process owner for demand planning at Procter & Gamble, said the big Cincinnati-based consumer products company eventually plans to standardize all of its demand and production capacity planning on APO, replacing a mix of applications from Manugistics, Inc. and other vendors.

Procter & Gamble has 15,000 R/3 users and wants to run as much of its business on SAP software as possible, Clark said. But committing to APO "wasn't an easy decision because, from a planning perspective, the functionality isn't all there," he added.

PLANNING AHEAD

Riverwood International Corp., an Atlanta-based maker of paperboard and packaging materials for the beverage industry, plans to use APO and SAP's new Business Information Warehouse data warehousing software as part of an R/3 rollout that is due to be finished early next year.

Robert Betts, director of global information systems at Riverwood, also said APO doesn't have all the pieces needed by his planners and schedulers yet. For example, they initially will have to keep doing transportation planning manually, he said.

But initial tests of APO's demand-planning features pointed out ways of lowering inventory costs that the Manugistics software now used by Riverwood missed, Betts said. And APO is expected to help the company work with its customers to fine-tune individual demand forecasts and production plans. "That's one of the key drivers for the whole R/3 project," he said.

Bruce Richardson, an analyst at AMR Research, Inc. in Boston, said the new applications could account for up to 30% of SAP's sales in three years — with most of the money coming from users who first choose R/3.

"They're really throwing the gauntlet down in these markets," Richardson said. "But the idea that someone would want to buy this stuff to use with their Oracle applications is delusional." □

World wide watch: Surfer census

▸ *Audience size puzzles E-commerce planners*

By Sharon Machlis

JUST HOW MANY Web surfers are out there, anyway?

Nielsen Media Research last month said there are more than 70 million Americans on the Internet. Framingham, Mass.-based International Data Corp. (IDC), in contrast, reports 51 million. IDC is a sister company to *Computerworld*.

For executives trying to develop budgets and business plans for their World Wide Web activities, it can be hard to nail down the size of their potential markets.

INTERNET MARKETING

"Nobody really knows," said Teresa Krasinski, a spokeswoman for the Advertising Research Foundation in New York, whose members include major advertisers and media firms. "Right now, you can't even compare the numbers."

That's because whereas one research firm may count people 18 and older who have gone online in the past three months, another may target 16-and-older Web users who surf every week.

Numbers can differ because of methodology as well. IDC, for example, blends its survey data with industry information about PC and modem penetration to come up with its estimate; many other firms rely on random survey data alone.

The Advertising Research Foundation has established a group aimed at helping Web watchers compare apples to apples, so advertisers can get a better idea of how many people they are actually reaching — and thus what rates are fair. The group hopes to coax various rating agencies into publishing at least one standard statistic: Americans in the 48 contiguous states, 18 and older, who have used the Web in the past 30 days. Several have already agreed, and the group's next meeting is Sept. 29.

And one company, EMarketer in New York, hopes to cash in on the confusion, offering its own numbers that it said are an analysis of various other Internet forecasts.

EMarketer "statmaster" Geoffrey Ramsey said he believes that many Web estimates are overly optimistic. "They tend to include everybody who was ever on the Internet," he said. "We eliminate dabblers and dropouts." Another problem: Some people surveyed are embarrassed to say they aren't plugged in. "It's like saying, 'I've had my head in the sand for the last six years,'" he said. EMarketer estimates that there are 47.6 million Americans online.

Companies developing Web business plans typically start with the total available audience and then focus in on the demographics they are looking at. "You start building up the model," Ramsey said. "It needs to be built on decent numbers."

GOOD BET

But CommerceNet spokesman Loel McPhee said the Nielsen study used a reasonable definition to come up with 70.5 million people online: Americans 16 or older who were online at least once in the past month and still have Internet access, determined from random phone calls to 4,000 to 7,000 households per quarter.

CommerceNet, an electronic-commerce industry education and lobbying group, jointly conducted the Nielsen study.

HOW MANY OF US ARE ONLINE?

COMPANY	LATEST ESTIMATE OF AMERICANS ONLINE (USUALLY Q2)
Cyber Dialogue, Inc. *New York*	53.5M "active and current users" (self-defined, adults 18+)
EMarketer *New York*	47.6M adults (16+)
Forrester Research, Inc. *Cambridge, Mass.*	51M adults (12+); based on 120,000 responses to mailed survey
IntelliQuest Information Group, Inc. *Austin, Texas*	67.1M adults (16+) on the Internet at least once in the past 90 days; sample size of 3,500 households
International Data Corp. *Framingham, Mass.*	51.2M Internet users, 46.7 Web users; based on multiple surveys and analysis of industry data
Jupiter Communications, Inc. *New York*	59.9M Americans on the Web; based on survey of 50,000 people
NetRatings, Inc. *Milpitas, Calif.*	43.1M home Web users; based on 10,000 people called, 2,000 interviewed
Nielsen Media Research *New York*	70.5M adults (16+) used the Internet in the past month and still have access; based on 4,000 to 7,000 people surveyed per quarter

Companies on the Internet may not want to ignore the dabblers, said Tom Fornoff, an analyst at IntelliQuest Information Group, Inc. in Austin, Texas.

Once window-shoppers can be enticed to begin buying online, he said, many end up spending a lot of money. "Do you ignore them, or work on a program to ripen that market?" he said.

But some companies that hope to sell goods to consumers on the Internet now may want to look not at the total Web universe but instead at those who are most plugged in.

According to IntelliQuest, the most active 17 million Americans account for 68% of all activity online. The least active 17 million? Just 3%. □

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JDEdwards

Users plan for policy network pluses

By Bob Wallace

USERS ARE welcoming the arrival of policy networking with open arms because it provides greater control of network bandwidth and security features that have been long-awaited.

As a result, the four major internetworking vendors — Cisco Systems Inc., 3Com Corp., Bay Networks, Inc. and Cabletron Systems, Inc. — are offering it with new switches. Cisco recently debuted a system with support for its version of the emerging networking scheme.

Policy networking represents a major change in how users run their networks.

"It will enable you to manage your network environment as a resource instead of as a group of individual devices," said Jim Hutchinson, network manager at Children's Hospital in Boston. "It'll be networking nirvana." With policy networking IS managers can prioritize traffic by application to ensure that critical ones get the bandwidth they need when networks become congested.

Insurance Holdings of America CIO Jim Barry says "policy networking aids security"

"Policy networking will let us give top priority to our mission-critical enterprise resource planning traffic so that an unimportant file transfer doesn't stomp all over our SAP transactions," said Eric Pylko, global infrastructure coordinator at Eastman Kodak Corp. in Rochester, N.Y. "It will prevent that problem on our slower WAN links where bandwidth is limited and expensive."

Information systems managers create policies, which are instructions on how to apportion bandwidth and what resources users can access. The policies are then sent to dedicated distributed servers for logging and are relayed to switches and routers in the network, which execute them when needed. "Having to go out and [make changes] to every WAN router represents a significant cost in manpower," Pylko said.

Policy networking, through directory services, also gives users greater flexibility and lets network administrators tighten security.

"I'll be able to create policies that define access to network resources on a per-user basis, which will be a big benefit because today it's almost an all-or-nothing situation," Hutchinson said. "Security is a huge concern because of distributed computing and mobile workers." Employees will be able to connect to the network anywhere and receive access to the same network resources, he added.

The fact that none of the four major internetworking vendors has delivered all the components that are needed for policy networking isn't stopping one user from moving forward.

"We're deploying policy networking to efficiently deliver video from kiosks and [consumers'] PCs to the desktop of our call center agents for the first time," said Jim Barry, chief information officer at Insurance Holdings of America LLC in Beverly, Mass. "We realized that if we didn't manage how our bandwidth was being allocated, the responsiveness of other applications would be in jeopardy."

As yet there is no interoperability among the schemes, which would present problems only to multivendor shops, said John Armstrong, an analyst at Dataquest in San Jose, Calif. "It's not in the vendors' best interest. And I'm not aware of an effort to address this." □

XML finding a place in Web procurement

By Cynthia Bournellis

BUSINESSES ARE starting to look to XML to reduce procurement costs when buying indirect goods over the Internet.

Two companies have joined forces in an attempt to lead Extensible Markup Language (XML) into Internet procurement. Commerce One, a developer of electronic-commerce procurement systems that link buyers and suppliers in a real-time trading community, and Veo Systems, Inc., a developer of XML-based products for trading-partner networks.

Early next year, Veo's technology will become part of an existing Commerce One extranet product called the Commerce Chain Solution. That product includes BuySite, a program that automates the procurement process from requisition to order, and MarketSite, software that automates supplier interactions from order placement to payment. Commerce One said the integration of XML into its electronic-commerce network will speed up the indirect goods and services supply chain, thus helping companies reduce operational costs and increase efficiency. The use of XML will "crank the procurement process up a notch," said Chrys Varnes, director of Los Angeles County's Countywide Acquisition Management Information System (CAMIS) project.

Varnes said the addition of XML to Commerce One products should bring the county closer to its procurement-savings goals. Because of XML's ability to define products, buyers can quickly identify the right products at the right price through suppliers' online catalogs. The county, which expects to have the Commerce One product running by October, spends $70 million annually on goods for many sectors, ranging from health care to highways. The CAMIS project aims to reduce inventories, which Varnes said can be as high as 17% per item.

Online catalogs are the first applications taking advantage of XML. "XML gives buyers access to a common ground," said Mary Laplante, an analyst at Fastwater LLP, a Pittsburgh consultancy. Because XML gives definition to text, products can be categorized, which helps buyers when searching online.

Scott McCormick, a project manager at Pacific Gas & Electric Co. in San Francisco, is working on a catalog system that will integrate a BuySite add-on product called MultiSupplier Catalog into an SAP AG purchasing application designed to contain six supplier catalogs, each holding between 7,000 and 8,000 items, by the end of next year. The goal is to reduce the potential for errors. For example, suppliers sometimes "describe the same products in different ways," McCormick said. □

XML provides more self-descriptive data for Internet communication than HTML:

LAPTOP DESCRIPTION IN HTML

```
<TITLE>Laptop Computer</TITLE>
<Body><UL>
<LI>IBM Thinkpad 560X
<LI>233MHz
<LI>$3,200
</UL></BODY>
```

LAPTOP DESCRIPTION IN XML

```
<COMPUTER TYPE="Portable">
<MANUFACTURER>IBM</MANUFACTURER>
<FAMILY>Laptop</FAMILY>
<LINE>Thinkpad</LINE>
<MODEL>560X</MODEL>
<SPEED>233 MHz</SPEED>
<PRICE CURRENCY="USD">3200</PRICE>
</COMPUTER>
```

Year 2000 bill would encourage data sharing

By Matt Hamblen

THE YEAR 2000 Information and Readiness Disclosure Act unanimously passed the Senate Judiciary Committee last week and is expected to move quickly to the full Senate.

The bill (S 2392) encourages the exchange of technical information among companies for solving year 2000 problems and preparing contingency plans. In the revision passed by the committee, companies don't avoid liability for selling products that don't work.

Sen. Robert Bennett (R-Utah), chairman of the Senate Committee on the Year 2000 Technology Problem, introduced the original measure in July and endorsed the substitute bill drafted by senators Orrin Hatch (R-Utah), chairman of the Judiciary Committee, and Patrick Leahy (D-Vt.), the ranking Democrat on the committee. "This legislative compromise is essential to the continued economic well-being and security of our nation," Bennett said.

The National Association of Manufacturers, a group of 40 business associations, immediately backed the revised bill. "We need immediate legislative action to help get the country ready for the year 2000," said Jerry Jasinowski, the association's president. "The Hatch/Leahy bill will improve Y2K readiness by addressing many industry concerns about liability and antitrust protection."

In the measure, information sharing is encouraged because incorrect year 2000 statements would be protected from liability — as would the persons who make the statements — unless a plaintiff in a lawsuit can prove that information was deliberately false or provided recklessly or with the intent to deceive.

The protected statements don't include filings about readiness with the Securities Exchange Commission or banking regulators.

An addition protects the confidentiality of voluntary industry or economic-sector information provided to the federal government. The government won't release such information without the approval of the company that gave it, the senators said.

A bipartisan coalition of senators and the chairman of the President's Council on Year 2000 Conversion endorsed the substitute version, which the committee passed by an 18-0 vote on Thursday. □

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Middleware tools link business applications

By Robert L. Scheier

TWO COMPANIES are offering a new option for users who need to link business applications such as those from SAP AG or J. D. Edwards & Co. using message-oriented middleware.

Oberon Software, Inc. in Cambridge, Mass., last week announced that it has licensed its Prospero application-integration software tools to Englewood, Colo.-based New Era of Networks, Inc. (Neon) to resell along with Neon's own MQIntegrator. The combined tool set will let Neon extend IBM's MQSeries message-oriented middleware to increasingly popular business applications.

Message-oriented middleware is software that allows applications that run on different platforms to share data without having to be in constant communication.

Such application-linking capability could help Blue Cross/Blue Shield of Rhode Island improve customer service, said George Trudel, business and technology office consultant at the Providence health insurer.

"We are ... looking at moving toward capturing a lot of the procedural and policy information in Lotus Notes, and we need to link that into a transactional database which resides on the other side of MQSeries," Trudel said.

> "Before products like this came out, people were doing [application integration] piecemeal
>
> Jeanine Fournier, Aberdeen

Bringing together both sets of information on a customer service representative's PC would get answers to customers' questions more quickly and accurately. But Trudel said such integration hasn't yet been a top priority and that it is too soon to tell how attractive the Oberon/Neon approach might be for achieving it.

BUILT-IN LOGIC

Prospero is a suite of tools that includes prebuilt interfaces designed to take into account how the receiving application works. It has built-in logic that makes it easier to exchange data with business applications such as SAP, said Oberon President and CEO Joe Chappell. Neon's MQIntegrator does much the same with MQSeries, he said.

The companies said they expect to begin shipping adapters to link MQSeries with J. D. Edwards, Siebel and Lotus Notes early in the fourth quarter.

"Before products like this came out, people were doing [application integration] piecemeal," said Jeanine Fournier, a senior analyst at Aberdeen Group, Inc. in Boston. "What these products are trying to do is to alleviate a lot of the manual work."

Neon's MQIntegrator makes the integration easier by translating an MQSeries message into a form that a business application such as SAP can understand, Fournier said.

Chappell said it costs on average about $100,000 to integrate a J. D. Edwards installation with another application using the tools. □

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Just add it to your existing applications with our ACUCOBOL-GT WYSIWYG screen painter, using the same "widgets" you find in VB and other front-ends.

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It's easiest with ACUCOBOL-GT. Just add a hyperlink to your application or embed it in your page, then have your clients install our plug-in for their Netscape or Microsoft browser re done.

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Windows NT Workstation is 26%* faster than Windows 98 (it's also faster than Windows 95, for that matter). So everybody, including you, gets more done.

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Windows NT
Workstation 4.0

*Performance testing conducted by National Software Testing Laboratories, Inc. (NSTL℠) in June, 1998, using Winstone® 98 developed by Ziff-Davis Benchmark Operation (ZDBOp℠) across a variety of computers with 32 and 64 megabytes of memory. Tests performed independently by NSTL without independent verification by Ziff-Davis. Ziff-Davis makes no representations or warranties. Winstone is a registered trademark or trademark of Ziff-Davis Inc. in the U.S. and other countries.

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LINUX RESOURCES

- **Instructions on how to download Linux**
  http://www.linux.org/help/beginner/install.html
- **Linux Journal**
  • A magazine for Linux users. It's available on newsstands, by subscription and online at *http://www.linuxjournal.com*

BOOKS

- **Using Linux**
  Author: Bill Bell
  Publisher: Que Education and Training
  Date published: July 1998
  Cover price: $29.99
  For the beginner to intermediate user of Linux and geared toward the day-to-day use of the operating system

- **Linux for Dummies Quick Reference**
  Author: Phil Hughes
  Publisher: IDG Books Worldwide, a sister company to *Computerworld*
  Date published: December 1997
  Cover price: $14.99
  A reference manual for Linux commands

CONFERENCES

- **1998 Atlanta Linux Showcase Conference and Exhibition**
  Oct. 23-24 (following Networld/Interop '98 Atlanta)
  Atlanta
  For more information go to
  www.ale.org/showcase

- **The International Linux Conference and Exhibition**
  Jan. 7-10, 1999
  San Jose, Calif.
  For more information go to
  www.lincexpo.org

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Linux

DEFINITION: Linux (pronounced "lin-ucks") is an open-source, multitasking, Unix-like operating system. Multitasking allows Linux to run many programs at one time. The phrase "open source" means that Linux's source code is available free. Users can download the latest version from the Internet (www.ssc.com/linux/apps/ftp.html) or purchase the software on CDs, along with printed documentation and support, from vendors such as Red Hat Software, Inc. and Caldera, Inc.

Good (and bad) news: No one owns it

By Howard Millman

IN 1991, Linus Torvalds, a graduate student at Finland's University of Helsinki, wanted an alternative to DOS and Windows.

So he wrote his own version of Unix. In 1994, he released Linux 1.0. Since then, Linux has become one of the fastest-growing operating systems. The number of Linux users has almost doubled annually from 500,000 in 1994 to about 7 million this year.

The primary attraction of Linux is that it's open-source software, which means users can modify it to meet their needs without paying a licensing fee.

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Linux also spawns camaraderie among programmers. For example, if a programmer discovers a defect in the code, he fixes it and shares the patch with others. Thus Linux gets improved continuously.

Linux could be an alternative to Windows in many organizations, according to Bill Peterson, an analyst at Framingham, Mass.-based International Data Corp., which is a sister company to *Computerworld*.

According to a survey by Dataquest, a market research firm in San Jose, Calif., the number of companies using Linux increased 27% last year. Linux and Windows NT are the only enterprise-class operating systems whose market share is growing

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Will applications be available?

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Ironically, Linux's biggest benefit, the fact that no one owns it, is also its biggest drawback: Chief information officers want someone to be responsible for Linux, Peterson says.

Bottom line: If Linux is going to stay around, it will need applications to run on it. "Applications drive operating system sales," Peterson says. "The more quality applications available on Linux, the easier it is to sell Linux."□

Millman operates the Data System Service Group LLC, a consultancy in Croton, N.Y. Reach him at (914) 271-6883 or hmillman@ibm.net.

GLOSSARY

– A complete implementation of the Linux operating system. It includes the tools needed to modify it.

– The heart of the operating system. It manages memory, files and allocates hardware resources.

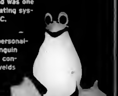
– Short for 'manual pages.' Documentation for Linux.

– Software that is freely available and can be read, modified and redistributed. For example, the kernel and other operating system devices are open so developers can write to them and share them with others.

– Program instructions in the original form.

– A multiuser, multitasking operating system for workstations. It was meant to be used only by programmers and was one of the first operating systems written in C.

–



Linus Torvalds personally chose this penguin because it looks content – what Torvalds believes Linux users are.

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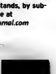

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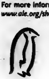

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Linus Torvalds personally chose this penguin because it looks content – what Torvalds believes Linux users are

“If they can put a man on
the moon, why can’t they solve
my company’s IT problems?”
We did. And we can

OPINION

Name game

Host: "Welcome to *Name That Buzzword*, the game show that matches new high-tech terms to the old technology concepts they describe! Our contestants are ready, so let's begin.

"This buzzword describes a large computer that runs mission-critical corporate applications very quickly." *Buzz!*

Contestant No. 1: "Is it a mainframe?"

Host: "Oh no! We're talking about an Intel cluster server. That's a concept dreamed up by PC makers to compensate for the fact that their desktop products are about as differentiated as sponges today.

"On to our next buzzword. This describes a midsize computer that acts as a front end to a variety of corporate hosts, database servers and other back-office systems. It's one of the hottest new markets in the industry. IDC expects it to triple in size to a billion dollars by 2001." *Buzz!*

Contestant No. 2: "Is it a minicomputer?"

Host: "Enter the '90s, Contestant No. 2! We're talking about an 'application server.' With Netscape, Oracle, IBM, NetDynamics, Inprise and others signed on, how can this not be a great new market? Bad luck.

"Question No. 3: Who's got the time and people to maintain all your own financial applications anymore? This revolutionary concept puts those applications on an off-site computer and lets users get at them through the convenience of their Web browser for a fee." *Buzz!*

Contestant No. 1: "I got it! It's time-sharing!"

Host: "Wrong! It's a brand-new concept called 'application rental,' and Forrester thinks it'll be a $6.4 billion market by 2001.

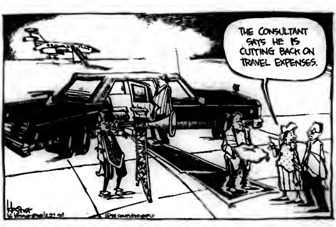
"Final category. This buzzword is, quite simply, the future of the desktop. Used to access information from a computer on a network, it presents information one screen at a time for browsing and data entry." *Buzz!*

Contestant No. 1: "It's a 3270 terminal!"

Host: "No, it's a browser, No. 1. And it'll cause thousands of IT organizations to throw out their client/server investments over the next few years.

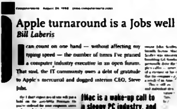
"Too bad, contestants. No winners this time. But be sure to join us next week when we'll talk about programming. Is it an object or a subroutine? We'll find out next week on *Name That Buzzword!*"

Paul Gillin, *editor in chief*
Internet: *paul_gillin@cw.com*


THE CONSULTANT SAYS HE IS CUTTING BACK ON TRAVEL EXPENSES.

LETTERS

Column's recognition of Jobs' efforts is much appreciated



Computerworld August 24, 1998 (www.computerworld.com)

Apple turnaround is a Jobs well done

Bill Laberis

I can count on one hand — without affecting my typing speed — the number of times I've praised a computer industry executive in an open forum. That said, the IT community owes a debt of gratitude to Apple's mercurial and dogged interim CEO, Steve Jobs.

iMac is a wake-up call to a sleepy PC industry, and the mercurial Jobs deserves credit.

I THOUGHT Bill Laberis' column on Apple and Steve Jobs ["Apple turnaround is a Jobs well done," CW, Aug. 24] was great, but I must point out the grievous error in the following sentence:

"Sculley was succeeded by the hapless, bumbling Gil Amelio, who appeared to personally drive the final nail into Apple's coffin — never mind his apologia of a memoir or his claim that the company's present resurgence is a result of an Amelio grand plan."

Although I think that Amelio was the wrong man for the job, at least he did something. Sculley was actually succeeded by the hapless and bumbling Michael Spindler, upon whom it may be argued lies the blame for Apple's darkest days.

Nice article. Keep up the good work.

Fred Giuffrida
Paladin Software
Hudson, N.H.
fred@paladinsoft.com

AS president of a Mac-only consulting firm in what is arguably the heart of the Internet, I want to thank Bill Laberis and *Computerworld* for publishing such a simple, telling statement about the PC industry today.

I'm so tired of hearing potential clients ignore the extraordinary benefits of the Mac operating system in the enterprise, while simultaneously ignoring the higher total cost of ownership associated with the Wintel platform.

Jack Biello
Technology Consulting Services, Inc.
New York
tecsvcs@aol.com

THANKS FOR the excellent column on Steve Jobs and Apple.

We are usually surrounded by an arrogant refusal to think, imagine, see. I hope a few people will start asking "What if . . . ?" The first to join the ranks of the newly un-wrong are usually an interesting bunch.

Leif Smith
Pattern Research
Denver
www.pattern.com

SINCE I'VE already said my thanks to Steve Jobs for his work as "interim" CEO, I wanted to say thanks to Bill Laberis for such a thoughtful and balanced column. Rather than harp on the "Apple isn't out of the woods yet" line, you focused on what the company is doing right now — and doing well — and you rightly credited Jobs for that.

You rightly credited Jobs

Curtis Michelson
Orlando, Fla.
curtism@gdi.net

I JUST READ Bill Laberis' column on Steve Jobs and, I must say, he gets it.

I have consistently thanked Steve Jobs for his tireless efforts and amazing accomplishments. Now it's time to thank Laberis for recognizing them and having the courage to write about them.

Shervin Shahrebani
Toronto
shervin@shaw.wave.ca

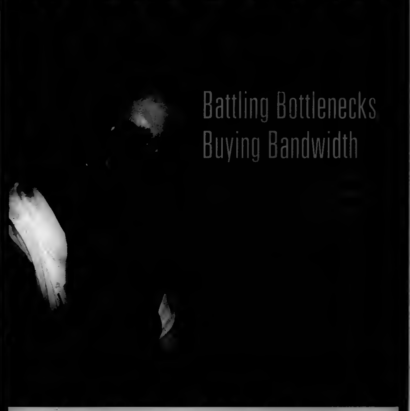
More letters, page 44

***Computerworld* welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.**

FROM THE EDITORS OF
COMPUTERWORLD
VOLUME 3, NUMBER 9
SEPTEMBER 21, 1998

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL



Battling Bottlenecks
Buying Bandwidth

INSIDE ■ DIAGRAM OF AN UPGRADE, PAGE 2 ■ NETWORK TIPS, PAGE 7 ■ BROCADE COMMUNICATIONS, PAGE 10

Continued from page 1

upgrade Charles Bailly's Ethernet backbone to Gigabit Ethernet speed.

David Stone, IS manager for the combined firm, now known as Eide Bailly, was anticipating, among other things, intense growth in a number of intranet/extranet applications. The firm plans to deploy an IP-based videoconferencing application in the next two years. Other plans include developing an extranet application that would allow customers to file their debit and credit information electronically, eliminating the once classic scene in which customers show up at their accountant's office with a shoebox full of receipts.

The new network, completed in mid-June, brings 100M bit/sec. power all the way to the desktop, according to Stone. Eide Bailly employees use that power to link up to a company intranet that gives them access to policies and procedures, a document repository containing frequently used accounting forms, project schedules and a bi-weekly company newsletter.

But bottlenecks still occur sometimes at the main file-and-print server as it struggles to handle the traffic coming in through the wide open network pipes. The problem, Stone says, is that with everyone communicating with the server at such high speeds, the server can't keep up. While the delays — when they occur — last just a few seconds, it's long enough to bother Stone.

"We've created these giant roads to get to the ballpark but people can't get in because the doors are too small," he says.

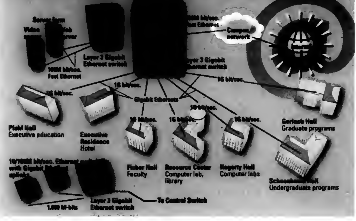
As a short-term solution, Stone is in the process of installing several 100M bit/sec. Ethernet network interface cards in the server. He says he eventually plans to install a Gigabit Ethernet interface but only when he believes they have been tested enough in the marketplace to be proved reliable.

"There are a couple of cards out there, but they're not ready for prime time," he says. "I'm going to let some other people bleed on it before I put it in my server."

BANDWIDTH HOGS

At businesses around the country, network infrastructures can be described in two ways. At many firms, the bat-

It's Academic: Ohio State University's Fisher College of Business began Phase 1 of its network upgrade from 10M bit/sec. segments to Gigabit Ethernet and high-function Layer 3 switches this summer. The college plans to upgrade to higher-density Layer 3 Gigabit Ethernet switches next summer. Fisher went with Gigabit Ethernet because of functionality, price and class of service and Layer 3 Gigabit Ethernet switches for IP multicasting and filtering, says Kurtis Lindemann, network analyst. Below is a diagram of what the completed network will look like.


Server farm
Video server
Web server
Layer 3 Gigabit Ethernet switch
100M bit/sec. Fast Ethernet
100M bit/sec. Fast Ethernet
Campus network
Internet
Layer 3 Gigabit Ethernet switch
1G bit/sec.
1G bit/sec.
1G bit/sec.
Gigabit Ethernets
1G bit/sec.
1G bit/sec.
1G bit/sec.
1G bit/sec.
Pfahl Hall
Executive education
Executive Residence Hotel
Fisher Hall
Faculty
Resource Center
Computer lab, library
Hagerty Hall
Computer labs
Gerlach Hall
Graduate programs
Schoenbaum Hall
Undergraduate programs
10/100M bit/sec. Ethernet switches with Gigabit Ethernet uplinks
1,000 M-bits
Layer 3 Gigabit Ethernet switch
To Central Switch

INFRASTRUCTURE

Continued from page 1

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INSIDE PHOTOGRAPH BY JOHN PEARLMUTTER
CHART AND SPOT ILLUSTRATIONS BY BETSY HAYES

teries of networking hardware and software already are under siege, nearly buckling under the weight of the demands from an ever-increasing phalanx of bandwidth-hogging intranet applications that threaten to suck up new capacity as fast as it can be added. Among the most voracious are video-streaming technologies that are in demand in industries ranging from education to financial services. And if firms are not yet struggling with how to supply bandwidth for these and other applications, they hardly can be smug. Like Eide Bailly, they know that before long they too will be in the same position.

All this comes at a time when more and more firms are seeing that state-of-the-art netwotks can give them a hefty advantage over their competition. Some of the advantages: better contacts with suppliers, improved customer relationships and lower costs. With the CEO paying closer attention than ever to the CIO, and the CIO tying his company's fortunes to the intranet, the stakes have never been higher.

At the same time, the challenges have never been more difficult. Rapid application development has sharply curtailed the time it takes to develop new programs, giving network managers far less time to meet the demand when new tools come online. Particularly threatening ate the off-the-shelf, IP-based audio and video applications already favored by an increasing number of healthcare, government and educational organizations and now attracting the interest of financial services firms, among others.

"Most network managers realize that even if these things are not on their networks today, they are going to be soon whether they put the infrastructure in or not," says Melinda LeBaron, research director at Gartner Group, Inc. in Stamford, Conn.

Some consultants — though not LeBaron — tout buckets of bandwidth as the one-size-fits-all solution.

Tom Nolle, a networking analyst and president of CIMI Corp., a consulting firm in Voorhees, N.J., fot instance, says that more and more companies ate opting to over-supply bandwidth rather than tightly manage their networks. The reason, he says, is that in the past year the ptice of purchasing addirional bandwidth from companies, such as Bay Networks, Inc. and 3Com Corp. has dropped considerably to the point where it is now about $100 per port.

"Why screw around with Layer 3 switching and Layer 2 switching when the problem is bits?" Nolle asks. "The truth of the matter is that in today's marketplace there is no reason why any user would want to adopt any strategy for LAN building other than to over-supply with bandwidth."

Pethaps, but others say that Eide Helmeke's tie-ups at the server demonstrate what Stone and othet network managers already know: Complex problems rarely have simple solutions.

Solutions, bowevet, are what network managers are looking for. For some the answer is Gigabit Ethernet, while for others it's ATM. While some firms are opting for complex managemeot tools to carefully monitor and direct the flow of voice, data and video, others are simply widening the pipes enough to obviate the need for tight network management.

Short-term solutions include load balancing — the re-routing of network traffic around the busiest servers — and caching, which involves putting frequently requested pages in RAM on local servers.

"WE WANT TO DO low maintenance and low management. We just want the network to run itself."

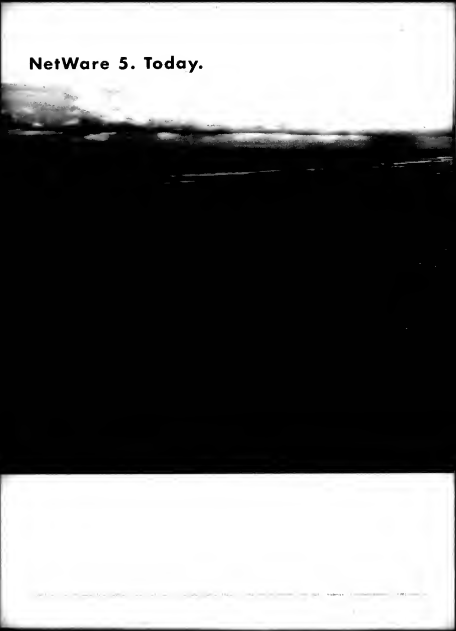
NIRAJ PATEL
GMAC

BANDWIDTH IN ABUNDANCE

Niraj Patel, the CIO at GMAC Commercial Mortgage Corp. was worried as he watched the Horsham, Penn., firm grow from 54 employees in one office in 1994 to more than 1,200 people spread out across 42 branch offices today. The firm started with a switched Ethernet network with 10M bit/sec. at the desktop scaling up to 100M bit/sec.

Earlier this year, network utilization was averaging only about 6%. Still, Patel says, customer service representatives at the loan servicing firm were experiencing delays at peak hours of a second or more as they switched from screen to screen in a commercial loan servicing application. Worse, a document imaging program from Optika Imaging Systems, Inc. took five minutes or more to create an image, a problem that was improved considerably when the proprietary client was replaced with a Web browser.

Fine-tuning network interface cards helped create some efficiencies, accord-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INFRASTRUCTURE

Continued from page 3

ing to Patel. But he says that the addition of more and more applications, many of them intranet-based, combined with growth in the number of users simply was using up too much bandwidth. With more intranet applications on the way, the company simply stepped up to a Gigabit Ethernet backbone, dropping average utilization to about 2% (see case study Intranets, November 1997 http://www.computerworld.com/home/online9697 nsf/all/970922intra_proj).

> **"A YEAR AGO I would have thought that ATM was going to be the de facto standard. Now Gigabit Ethernet looks like it has the potential to have much greater marketshare."**
>
> BERNIE O NEIEL
> PRUDENTIAL

Patel says the excess bandwidth will soon be chewed up by a variety of database-intensive, Web-based applications currently under development. Among them are a survey application that will allow the human resources department to question employees about a variety of topics and develop online reports. In the next few months, employees also will be able to track inventory, file expense reports and request loan checks through several new self-service applications under development.

With all of those applications expected to be jockeying for space on the network, he decided the best choice was simply to oversupply bandwidth.

"We want to do low maintenance and low management," Patel says. "We just want the network to run itself."

NO SUBSTITUTE FOR MANAGEMENT

But Gartner's LeBaron says that solving infrastructure problems is not nearly so simple. As Eide Bailly's Stone found out, widening the pipes can simply push the problem onto a different point on the network — for example, the I/O interface.

"The problem is that most servers can't put out a gigabit," LeBarun says. "Maybe they can put out about 400M bit/sec. So if the server becomes a bottleneck, it will throw away the traffic because it doesn't have enough processing cycles, which will just create more traffic when the original transmission has to be sent again."

In other words, management is important in any environment.

The network managers at Ohio State University's Fisher College of Business learned that lesson when they began upgrading the infrastructure from shared 10M bit/sec. segments to Gigabit Ethernet at the beginning of July. Among other things, they were facing an increase in use of WebCT, an intranet application developed at the University of British Columbia in Vancouver that allows faculty members to get course materials to students online and creates chat rooms for online office hours.

Network utilization dropped from upwards of 60% to 70% down to about 20% or so, but the problems haven't been eliminated.

"It used to be that the network was the bottleneck," says Kurtis Lindemann, a network analyst at the college. "Now the server is the bottleneck."

In the case of a trio of computer labs that previously had relied on a single Compaq Computer Corp. server, the school simply gave each lab its own Dell Computer Corp. servers. In other cases, Lindemann's team added disk arrays to several servers that are in high demand.

"You really have to architect the server to put out the bandwidth," says Lindemann. "You have to have RAID arrays or fiber channel arrays that can do a lot of intensive I/O."

When it comes to management some users have shied away from ATM because of its perceived complexity. But Gartner's LeBaron says that things have changed in the last couple of years.

"There has been a lot put in place that makes ATM simpler," she says. "There are much easier to use interfaces for configuring troubleshooting tools, for example."

At least one firm wasn't yet convinced that ATM was ready for prime time. But rather than upgrade to Gigabit Ethernet, the Prudential Insurance Company of America, Inc. has instead deferred the decision, waiting to see if one of the paradigms comes to dominate the marketplace in the next few years.

Prudential began a multimillion dollar upgrade of its corporatewide network in early 1997. On the LAN level, the firm moved from collapsed Token Ring to a switched Ethernet network with 10M bit/sec. at the desktop scaling up to a 100M bit/sec. backbone.

Among other things, Prudential was facing intense growth in intranet applications. The company built an intranet on top of Lotus Development Corp.'s Notes that now boasts more than two dozen applications. Employees can register for training courses after viewing an online catalog of offerings, route travel vouchers and even reserve parking spaces at their site. Bernie O'Neill, vice president of distributed computing and networking for Prudential, says that the company built up the network only as much as it needed to, giving itself enough bandwidth for the present while avoiding the temptation to lock in with one technology.

"We've implanted switched Ethernet as a stepping stone," says O'Neill. "We'll either scale that to higher speed or ATM or Gigabit Ethernet. All we would have to do is take out the 100M bit/sec. Ethernet (network interface) cards and put in cards for ATM or Gigabit Ethernet."

Which way Prudential will go, says O'Neill, depends on cost and which approach might offer the best scalability down the road.

"A year ago I would have thought that ATM was going to be the de facto standard," he says. "Now Gigabit Ethernet looks like it has the potential to have much greater market share, which means more products will be available. We're in a good position to sit back on this one until we have to make a business decision."

ATM ADVOCATE

The University of Kentucky, for one, already cast its vote for ATM and has found that the advantages far outweigh the issues of complexity as it races to deliver video to the desktops of students and faculty to both aid in research and to supplement other course materials.

The Lexington school began building an ATM network three years ago before Gigabit Ethernet was available. Today, the school has an OC12 ATM network that it sees as the best solution to handle an ever-expanding number of video-based applications on the intranet.

"The video servers require a more mature quality of service than we can get from Gigabit Ethernet," says Doyle Friskney, associate vice president of information systems at the university. "And with ATM we could go from OC12 to OC192

Looking Beyond Hardware and Software

When it comes to making networking infrastructure choices, many network managers say that hardware and software isn't always as important as vision and consistency.

"The most important thing to do is to pick a player and stay with them," says Doyle Friskney, associate vice president of information systems at the University of Kentucky in Lexington.

"If you're going to go with Bay Networks, go with Bay for switches, routers and ATM. It's going to be tough enough to introduce quality of service. If you put a little bit of everything into the network trying to do lowest cost, you end up with the lowest common denominator," he explains.

Jim Gogan, director of networking and communications for the University of North Carolina at Chapel Hill, says that network managers should remember that they aren't just purchasing products but rather a "technology direction" that should carry them into the future.

"We invest more in strategic direction and overall architecture than in lowest cost per port," he says. "We're not buying to address only today's concerns but also to make sure that products are developed and will be available to meet our needs two, three or four years down the road."

"THE MOST important thing to do is to pick a player and stay with them."

DOYLE FRISKNEY
UNIVERSITY OF KENTUCKY

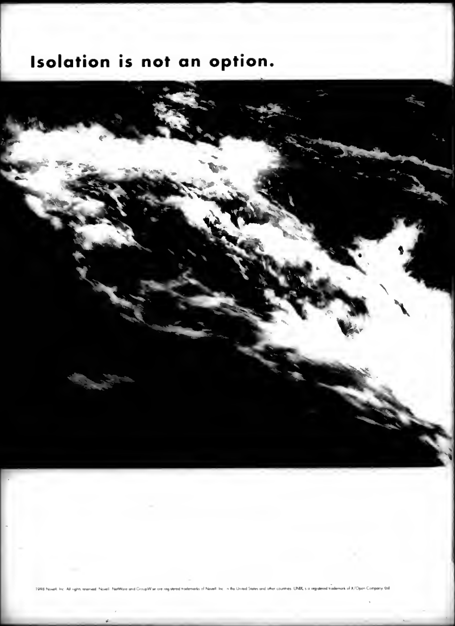
Companies need to think very carefully about future business growth and about the types of applications they would like to put on the network when the expansion occurs, explains Jim Balderston, an industry analyst at Zona Research, Inc. in Redwood City, Calif.

"If I've got 100 people now but expect the business to triple in size, I want the network to have the capacity to do that without having to rip it out and replace it," he says. "Companies should ask: How big are we going to get? What are we going to do on the network? Are we going to do E-commerce? Are we going to tie in all of the inventory and manufacturing applications?"

The payoff, Balderston says, is great.

"The more precise a company can be in doing that, the more likely that the network, when finally built, will meet their needs."

TOM DUFFY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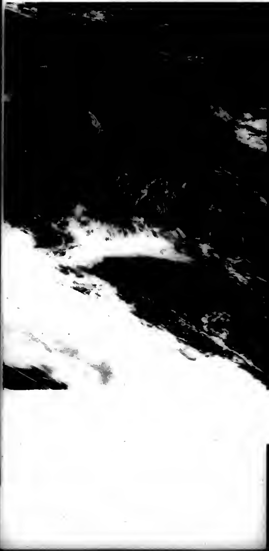

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and beyond."

As far as short-term solutions go, analysts say that load balancing — managing requests and re-routing traffic around clogged servers — is among the most popular.

"Say my server in New York is getting pounded," posits Jim Balderston, an industry analyst at Zona Research, Inc. in Redwood City, Calif. "I can route customers to my server in Chicago. They may have to go further over the network and that may cause some network delays but at least they are getting some satisfaction."

Users can also load balance among local servers. That's exactly what Eide Bailly's Stone says he recently asked engineers in his department to do on a pair of servers running NetWare 4.11.

"It's a short-term solution," he says. "But we'd like to have it implemented before our next tax season coming up here."

Network managers can ease their minds about at least one topic. While the Internet backbone is slowly moving to a new standard, IP Version 6 (IPv6), analysts say that it's far too soon to worry about it.

"WE'VE CREATED THESE giant roads to get to the ballpark, but people can't get in because the doors are too small."

DAVID STONE
EIDE BAILLY

"What most people want it for — the security features — have been built into v4," says Maribel Lopez, an analyst at Forrester Research, Inc. in Cambridge, Mass. "So therefore the only thing left would be addressing space, which can be taken care of with internal addressing or using one IP address to the outside world."

That's certainly a relief to the network managers grappling with how to create space for an ever-swelling tide of intranet applications. At Eide Bailly, those include a Microsoft SQL database currently in production that would provide a directory of specialties for every accountant in the company. There's also the back-to-the-future application that will allow customers to do online reporting of critical accounting information.

"We see a tremendous potential for using the Internet to service our clients," Stone says. "The bandwidth demands are only going to increase."

Duffy is a freelance writer based in Northampton, Mass.

PROJECT: BROCADE COMMUNICATIONS SYSTEMS

Switching Gears to Speed Simulations

By Steve Alexander

Despite its expertise in data center networking, 3-year-old Brocade Communications Systems, Inc. in San Jose, Calif., found itself no better off than nontechnology firms when it came to intranet congestion. Brocade sells high-end data center switches that are used to connect server clusters to storage arrays and enable any server to talk to any storage unit. But that technology isn't designed for intranets. As a result, 130-employee Brocade looked to outside switching vendors to solve the intranet transmission speed bottlenecks that were slowing Brocade's new product development, which relied on running large software simulations over the intranet. An initial hardware upgrade was made a year ago, and by year's end Brocade hopes to further improve performance by consolidating many switches into a few switch chassis'. Josh Judd, Brocade network engineer, explains what had to be done.

WHAT THEY'RE DOING

Our pattern of intranet use required higher speed because we have machines running simulations and compiles to network file servers as part of new product development. If the connection to the file servers is slow, that is a bottleneck in product development. So obviously it is in our best interest to make that fast. We looked to outside vendors because the intranet upgrade required different technology than we sell.

WHY THEY'RE DOING IT

Our intranet is scaled for current requirements, but there is not much breathing room. Today our intranet uses a mixture of Gigabit Ethernet and 100M bit/sec. and 10M bit/sec. Ethernet, all switched.

If we did nothing to improve the intranet, we couldn't add many more switches to the switch array we already have because there are physical limitations on the number of ports available. In addition, as you add switches to this kind of array it gets exponentially harder to manage in terms of configuration changes, troubleshooting and other management tasks. A switch chassis was definitely the way for us to go from a management standpoint.

But at the time we purchased this equipment a year ago, we couldn't get it in chassis form. As a result, we have 27 workgroup switches (FastIron Workgroup Switches) and six backbone switches (FastIron Backbone Switches) from Foundry Networks, Inc. in Sunnyvale, Calif., all interconnected with Gigabit Ethernet. Working with Foundry, we'd like to reduce that system to a couple of chassis'.

The advantage on a chassis is that it has a lot of ports, so most things that need to talk to each other fast can be on the "A" chassis. You can put slower things on the "B" and "C" chassis', which, by trunking together several one gigabit lines, can be linked to the "A" chassis with eight gigabits of bandwidth. We need about 500 workstations, compute servers, disks and printers, so we probably will end up with three chassis' in December or January.

HOW THEY'RE DOING IT

We're doing it in stages. A year ago we had shared 10M bit/sec. hubs chained together using 10M bit/sec. Ethernet switches. To improve that speed, we did a major upgrade about a year ago by adding the Foundry switches and faster Ethernet. Later this year we'll do the upgrade to the chassis, not to improve speed but to improve manageability.

BENEFITS

Besides giving us better bandwidth, the next upgrade will improve intranet management. Now, any time we want to make a configuration change, the change has to be made on 33 different switches. By consolidating those switches into chassis', we might have to change two or three switches. In addition, it will be easier to do troubleshooting.

TECHNICAL CHALLENGES

We've already familiarized ourselves with all Foundry Networks configuration options and commands, so this upgrade should be pretty much a slam dunk.

We didn't look at ATM because it's slower and more difficult to set up, and it would have required replacing a whole lot of host adapters because ATM won't plug into an Ethernet port. If we stuck with Ethernet, we would not have to change anything.

WHAT'S ONLINE

For an expanded view of this project with RealAudio clips, point your browser to www.computerworld.com/intranets

COSTS

A year ago the upgrade cost us $250,000. This year's upgrade was thrown in as part of that because we are beta testing Foundry Networks' equipment.

RETURN ON INVESTMENT

We don't waste time on it. If I go to the engineers and ask, "Are the simulations running faster?" they say, "Way faster." And that is enough of a quantification. All of our management and engineers are network people, so they know what "way faster" means.

ADVICE TO OTHERS

Be really sure you know what you want to get out of a network upgrade before you do it. Do you want faster network connections, ease of management or cost savings? The big plus on Foundry is that all the stuff that comes up often is really easy to do. The hard parts with Foundry are configuration changes and troubleshooting, things that don't come up often. But you have to know what you're trading off.

Alexander is a freelance writer based in Edina, Minn.

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PHOTOGRAPH BY ERIC MILLETTE

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from a
standpoint

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Your year 2000 project may be in trouble if . . .

Michael Cohn

The clock's ticking. You're swamped. Your year 2000 project is way behind. Yet the grown-ups on Mahogany Row still think it's a hoax. They laughingly boast that they'll be flying commercial on Dec. 31, 1999.

Well, flying is one thing; landing's another. Take my advice: If your year 2000 project exhibits any of the traits on this list, you're dead meat. But stay calm. It's not yet time to place your head between your knees. With luck and hard work, you can fix the fiascos of year 2000 . . . probably by 3000.

1. Your project team's first meeting dissolved into a melee over whether 2000 is really a leap year. (Worse, one of your best programmers took a cinnamon roll in the eye and quit on the spot.)

2. Your project manager now insists you call him "Commandant," has piled sandbags around his desk and claims it's stupid to keep remediating 15 million lines of assembler code when 60% of the world's nations have barely started — including several with nuclear capability.

3. The megapriced time-and-material consulting firm that's been working on the project since 1994 promises the assessment phase is almost complete and should have an inventory to you "any day now."

4. Two of your LAN administrators swear they can make every 286-based PC in the place year 2000-compliant simply by whacking it really hard on the side at 11:59 p.m.

5. Human resources says your emergency request for retention bonuses is "under consideration" and suggests casual Fridays as an alternate retention strategy.

Your request for bonuses is under consideration; HR suggests casual Fridays as a retention strategy.

6. Your contingency plan consists of Stella down in payroll, who thinks she still has a manual typewriter in one of the kids' closets.

7. You bought an expensive tool that can set a mainframe's date back 28 years. Now the vendor claims that you haven't paid the license fee since 1970.

8. Your CEO gets in front of a camera and says, "We budgeted $200 million for year 2000. My neighbor's kid fixed the whole thing over Labor Day weekend for forty bucks. Mowed my lawn, too!"

9. Fortunately, your mission-critical, million-lines-of-code vendor has finally finished making its package "year 2000 functional." Unfortunately, that means it functions until 2000.

10. The CIO still claims that he can fix 300 million lines of code manually and plans to bring contractors on board in 1999. About 87,000 of them.

11. You asked the vice president of manufacturing to assess all the embedded systems in 42 plants worldwide. The only noncompliant device he came up with was a Mr. Coffee in a break room in Topeka.

12. The executive committee has concluded that it can solve the problem by replacing 16 of your core corporate systems . . . and plans to start writing a request for proposals right after Christmas.

13. You finally get a meeting with corporate counsel after 15 phone calls. The first thing he asks is, "What exactly do you mean by the term 'year 2000?' "

14. You plan to devote 50% of your time and money to test boxes, test tools, test staff, test direct-access storage devices, regression tests, integration tests, data agers and path-coverage analyzers, which at this rate can all be in place some time around March 2003.

15. There's a shrine to Bill Gates in the computer room, and third shift nightly prays he'll soon come up with something to fix this whole mess. □

Cohn is working hard on year 2000 and plans to for many, many years to come.

Virtual Viagra for flaccid apps

Michael Schrage

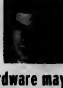
In a recent interview, Oracle CEO Larry Ellison tossed off a comment about his company's new database software capabilities that was really more revealing about the industry's hardware capabilities.

He might have provided greater insight into corporate software's future than he intended.

Ellison talked — perceptively — about how ever-faster processor speeds have enabled Oracle's new database software to cost-effectively take over the tasks of network and desktop file management. Now I don't do applications benchmarking, but Ellison's observation struck both a computational chord and a network nerve. Quantitative differences in hardware development do lead to qualitative differences in software development. Could investing in faster hardware consistently yield greater returns than investing in better software development?

Maybe CIOs aren't investing enough attention (or money) in how best to paraglide the hardware learning curves. Maybe computational brute force will matter a lot more than rigorous software design. That certainly proved true for IBM's Kasparov-bashing Deep Blue. My best bet is that it will also prove true for much of tomorrow's departmental/netcentric systems development. At Microsoft's New York DevCon, I had a friendly argument with a consultant/developer about the challenge of scaling up such languages as Visual Basic into greater mission-critical functionality. My opponent argued — persuasively — that Visual Basic is just too darned slow to do a lot of truly interesting stuff (high-volume online transaction processing, for example).

But what happens as processor speeds and I/O rates improve? Well then, he agreed, things could change. Dramatically. It's hardly news that enhancing hardware performance can enhance software performance. Who isn't utterly sick and tired of the kludgy bloatware that slogs through the microprocessors of most desktops? Rather than optimize performance, most departmental developers opt to featurize. But precisely what are we featurizing around? Scale matters. So does interoperability. So does speed. Sometimes hardware can play the role of virtual Viagra and give new enterprise life to a flaccid departmental app.



How many organizations have honestly analyzed how anticipated advancements in hardware could best leverage their existing stocks of departmental software? Survey after survey confirms that most companies haven't even done a decent job of inventorying their software applications. Can these companies really be aware of whether the apps they've developed might be qualitatively transformed by the quantitative advances in processors and I/O? With good developers scarce and expensive, maybe it makes more sense to throw faster processors and I/Os at problems rather than more sophisticated software development. Maybe it makes more sense to figure out ways to cost-effectively scale those Visual Basic and JavaScript applications to the enhancements in hardware rather than develop new apps from scratch.

Faster hardware may yield greater returns than better software.

I really wonder what the internal development competition is going to be between Visual Basic, C++, Java, JavaScript, Smalltalk and Cobol. I really wonder whether you get a better return by investing in "better" development and developers or in "better" platforms that can propel a legacy departmental app into an enterprise winner.

Let me put this in the crassest possible way: If there is one thing this industry proves beyond a shadow of a doubt, it's that hardware improvements are more predictable than software improvements. Do our investments reflect this reality? □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

WHAT'S IT GOING TO TAKE
TO MANAGE MY DATA NETWORK
WITHOUT HIRING AN ARMY?!

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Cry of the CIO: 'No mas!'

Bill Laberis

I'm working on a project that has me talking to several CIOs from mostly very large companies. I've asked them to basically pretend that information technology Christmas is coming and it's their turn to make out their wish list, one that will take care of their wants well into the 21st century.

I searched for a common theme in their answers, and I didn't have to look hard to find one. It reminded me of the plea of Roberto Duran who, when the bell rang for him to resume boxing after several rounds of being pummeled, replied in his native Spanish, "No mas." I've had enough. No more.

[redacted]

Here we are about to enter the last year of the millennium. The Internet revolution is in full swing, with its promise to utterly transfigure corporate networks. Sixty-four-bit enterprise computing is upon us now, with 128 bits waiting in the wings. Bandwidth barricades are being smashed, and soon a new generation of unanticipated applications will descend on the IT world to leverage these widened data highways. Internet-based electronic commerce has already irreversibly changed venerable businesses such as the securities trade and is now bearing down on just about every kind of commerce known to humankind.

You needn't be a Luddite to want a breather from rapid-fire IT advances.

All these seemingly wonderful technological advances lie just over the horizon. But when given a blank paper and asked to make a wish list, most CIOs said they want less, not more. In fact, reading between the lines of their lists, it's fair to say they'd like time to stop for a while, maybe a year or two, just so they can catch up. As one wrote, "There is a point where too much change too fast is just not good, and in some respects we are at that point today."

These people are not IT Luddites. To the contrary, their sentiments are almost identical to those I observed for years in various editorial readership studies; the No. 1 challenge was expressed as, "I can't keep up with it all."

There's no real blame to be assessed here. Vendors do what comes naturally: produce and market one generation of product after another.

But I do blame vendors in general for their chronic failure to recognize that increasingly, system implementations aren't constrained so much by software incompatibilities or network issues or platform selections. Rather, the biggest constraints are organizational — namely, a company's ability or lack thereof to manage both process change and people change when the ground is constantly shifting.

Meanwhile, the baseline needs of senior IT managers remain quite pedestrian. For example, IT is trying to figure out how to make Unix and Windows NT coexist; after all, the two are very different operating systems whose files users want to share in great numbers. Not one of the looming whiz-bang technologies I mentioned above will do anything to help IT manage this pervasive and business-critical issue.

That's the same kind of challenge the old-line MIS department faced 15 years ago when it tried to harmonize incompatible operating systems and hardware platforms — from the same vendor (IBM), no less.

IT constantly hears that the future is now. But seen in the light of many contemporary challenges, the future is yesterday. Is it any wonder that a CIO's wish list is likely to illustrate a case of less being more? ☐

Editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.*

Microsoft according to Shakespeare

David Moschella

Before we get lost in the details of the upcoming battle between the U.S. Department of Justice and Microsoft, I think it's a good idea to step back a bit and get a cultural perspective on what major antitrust confrontations are really all about.

And what could be more cultural than seeking wisdom directly from the Bard of Avon? Surely, no one has written more frequently, subtly and humanly about the nature of power, ambition and justice than William Shakespeare.

Unfortunately for Microsoft, most of what the great man has to say is clearly on the side of the Justice Department. Throughout the Shakespearean canon, few themes are more consistent than how excessive ambition often leads to personal destruction and social chaos.

Indeed, in one of Shakespeare's most famous works, we learn that uncontrollable ambition is the fatal flaw of the otherwise noble Macbeth. Worse still, when coupled with revenge, unchecked ambition leads to the high villainy of Richard III or Edmund in *King Lear*.

In contrast, the ideal Shakespearean leader, Henry V, uses his strength and satisfies his ambitions but recognizes that both sometimes need to be restrained.

In addition to those memorable characters, one of the more amazing things about Shakespeare is that he has conjured up quotes for seemingly all occasions. Here are a few worth keeping in mind during the coming months:

"O, it is excellent to have a giant's strength; but it is tyrannous to use it like a giant." *Measure for Measure*, II.ii.107.

"But 'tis common proof that lowliness is young ambition's ladder, whereto the climber-upward turns his face; but when he once attains the upmost round, he then unto the ladder turns his back, looks in the clouds, scorning the base degrees by which he did ascend." *Julius Caesar*, II.i.21.

"Then every thing include itself in power, power into will, will into appetite, and appetite, a universal wolf (so doubly seconded with will and power), must make perforce a universal prey, and last eat up himself." *Troilus and Cressida*, I.iii.119.

"I have no spur to prick the sides of my intent, but only vaulting ambition, which o'erleaps itself, and falls on th' other." *Macbeth*, I.vii.25.

[redacted]

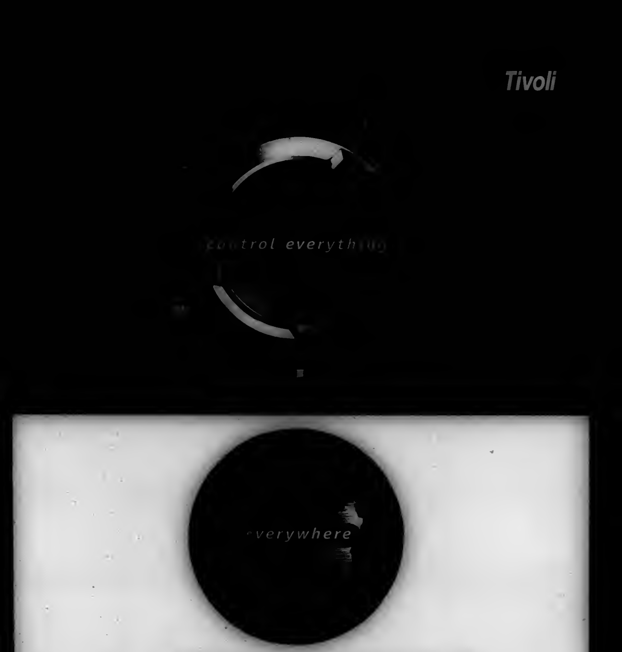
Unfortunately for Microsoft, most of what the great man has to say is clearly on the side of the Justice Department.

"We must not make a scarecrow of the law, setting it up to fear the birds of prey, and let it keep one shape, till custom make it their perch and not their terror." *Measure for Measure*, II.i.1.

Of course, Shakespeare's timeless tales of heroes and traitors and love and war are far removed from the narrow business disputes of today. Nevertheless, the underlying issues are often remarkably similar. Current antitrust law is founded on the very Shakespearean belief that giving too much power to any one company or man is fundamentally not a good idea.

To win its case, the Justice Department will have to show that this is one of those times when the common good demands that the strong be reined in. Shakespeare would likely agree. For him, the tougher question would be whether this particular story will play out as a comedy, where all's well that ends well, or as tragedy, where the great ax eventually must fall. ☐

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is dmoschella@earthlink.net.*



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Top 100 IT products list draws some disagreement

TO PREPARE a list of the top 100 IT products with "major impact" ["My top 100," CW, Aug. 3] and not include the C programming language takes some doing! (Especially with Microsoft Basic ranked so loftily.)

Aside from being the lingua franca behind a slew of applications, its roots are closely intertwined with those of Unix, the solid operating system that just keeps going and going and going. . . .

It's a shame that this widely used language was "gone with the wind" on Frank Hayes' personal top 100.

Bob Nelson
Dallas
bnelson@iname.com

WHERE is the Cisco router on your top 100 list?

The most powerful server, with however many processors, can't compete with a dedicated router with a microkernel and onboard diagnostics.

Cisco started with a small box that would accelerate and organize packets for maximum efficiency using the utmost in logic. That's all.

It beat the living *&'% out of anything in the market for routing.

Kevin Scott Karafa
Senior systems engineer
Network Appliance, Inc.
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WHOA, FRANK! NextCube is a top 100 IT product?

Let's give it an overall design award at best. And Delphi is very overrated, in my humble opinion.

Here are a few things I think you left out: the Pick operating system (still humming along); the Burroughs B-5500 (the first really productive virtual mainframe); and the Cray-1, of course.

I would also add Paradox for DOS (the best small relational DBMS ever), SAS software (the best friend a programmer ever had) and PC/370 (which lets you write IBM 370 Assembler language on a PC).

Earnie Aikens
Baylor University Medical Center
Dallas

My top 100

FRANK HAYES

didn't assemble a panel
f experts. ... I sat dow
nd made a list.

HAVING BEEN in data processing for 37 years, I was impressed with the diversity Frank Hayes' list showed.

It brought back some memories, but there is one very important item missing. That is the simple 80-column card, without which many of the items included would not work very well. Even though the physical card has pretty much disappeared from the scene, there are still many "card image" functions using the original 80-byte format.

Another item I would have selected is IBM's IMS database management system. You must admit that a process that is 30 years old and still going strong has got to be impressive.

But thanks again for the list. I enjoyed it. I wonder how many of your younger readers could identify some of the earlier items?

Robert L. Shotts
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There are still many "card image" functions using the 80-byte format

THERE WAS one product you seem to have left off your list altogether: IBM's IMS database product. It was a landmark in the ability of IT shops to create rapid-response transactional systems. It's only in recent times that relational systems have had access to the horsepower that makes them competitive for transactional systems. Throughout the '70s and early '80s, IMS was pervasive. It led to the rise of the database administrator and a number of other specialized roles within IT.

Michael T. Abbene
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MichaelT.Abbene@Energizer.com

I ENJOYED the top 100 list and think it's a good start.

But there were a couple of glaring omissions, such as BTAM/TCAM and all that early networking stuff that let companies build big networks and get terminals in front of lots of people.

I would also include Cincom, the first commercial database software company. It showed the way and is still around.

Rich Wolverton
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FRANK, YOU must be younger than your picture makes you appear. You should have included the backbone duo of every major data processing shop I've ever been in: Cobol and IMS.

While Cobol II is a very worthy product, the original Cobol should not be forgotten.

Thomas P. Johnson
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I WAS DELIGHTED to see Frank Hayes' high rating of Profs. I was an IBM employee at Endicott in the late 1970s, early 1980s and ended up being part of the productization work, more or less driving the debugging effort.

It was the most intense work experience I ever had: The prototype was both unfinished and full of bugs, and we fixed and enhanced at the same time. Interestingly, it was a client/server design, correctly built so that no hacker could get into the server.

However, I was surprised to see Digital Equipment Corp.'s VMS missing from the top 100 list. It was one of the best operating systems ever built.

And Microsoft Mail belongs nowhere on any list (it is derivative). Windows 3.1 is also derivative.

But you should name the Macintosh because it forced Microsoft to copy its functionality over the next 10 years. Bill Gates has not invented anything himself, although he has shown the world how to market.

John E. Mann
Somerville, Mass.
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FRANK, FRANK, FRANK! Boy, did you screw one up big time!

The world's first 32-bit minicomputer was the DEC VAX 11/780. . . . not the PDP 11/780. Also, I don't see NCSA Mosaic on here. (There would not have been a Netscape without it.) I would replace the MicroVAX 3500 with the MicroVAX II. Linux is rightly there, but, no Unix? Just DEC Ultrix?

Jim Jennis
Senior specialist/manufacturing
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jhjennis@imation.com

AHEM. One word, Frank: Unix. Whether it's System V, SCO, SunOS, IBM AIX, Apple AUX, Linux. No way can your top 10 not include the only real server operating system.

Unix was providing open, interoperable, pre-emptive multitasking a decade before Windows NT. Um, make that two decades.

OK, now I sound kind of like a marketing geek, but you know what I mean.

Michael Hyatt
Chief information officer
Coptech West
Sunnyvale, Calif.
www.coptech.com

No way can your top 100 products not include Unix the only real server operating system

Java promise unrealistic

COMPUTERWORLD'S story about Sun Microsystems' Jini technology ["Network nirvana promise revived," July 20] was completely off-base, but many of the technical details about competing products were at least partially accurate. I was particularly impressed to see that the writers dug up the Microsoft Millennium project, although their description of Plug and Play as a Windows-only feature is misleading. Plug and Play is a publicly documented (and relatively simple) hardware standard.

The problem lies with the overall message. A bank using Java to automatically make two disparate systems "talk" without conversions? Pure fantasy. Data formats and communications are only microscopically small parts of the problem. The main problem is the information itself: what is stored, logical relationships, business assumptions reflected by the data and so on. With the possible exception of being a useful general programming language, Java offers absolutely nothing to someone facing this kind of conversion.

I love Java as a language, but Sun promotes unrealistic expectations and makes embarrassingly bad marketing decisions. Java isn't even close to being able to provide the described functionality, short of throwing out your entire system and starting over.

Jon McGuire
Client application architecture
Merrill Lynch & Co.
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'Hate' moniker misleading

YOUR WHOLESALE characterization of independently operated complaint Web sites as "rogue" or "hate" sites ["<Your Company Name Here>sucks.com," CW, July 20] is inexcusable.

It violates a basic principle of objective journalism by using loaded terminology to encourage the reader to believe that all these sites are somehow morally or ethically wrong. Many of them offer only a forum for sharing of legitimate complaints against shoddy business practices. Shame on you.

R. D. Payne
Davis, Calif.
rdpayne@cal.net

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NOTE FROM EDITOR

A PRESCRIPTION FOR SUCCESS

True, every industry is desperately looking for quality IT professionals, but the health care industry faces even more difficult circumstances.

Health care ranked third in anticipated IT hiring this year after business services (other than IT) and education. It projects a 3.1% increase in permanent staff in the next three months and a 14% increase in the next year, according to *Computerworld's* July 1998 quarterly hiring survey.

And filling the ranks with top-notch talent won't be easy. The industry has to convince would-be hires that its negative image — antiquated systems and limited respect for or understanding of IT — is a thing of the past. But as our Health Care Careers Directory shows, health care is finally sporting a snappy new look. Business as usual is being replaced by critical IT directives driven by a variety of patient care and operational efficiency metrics (the by-product of analysis outcomes and managed care initiatives), not to mention year 2000 exigencies and data privacy concerns wrought by government mandates.

Addressing these issues requires advanced technology, which should translate into challenging IT projects. And the need to innovate — and quickly — is proving to be health care's drawing card with new hires. The chance to rebuild or modernize systems presents a significant opportunity for IT folks and certainly doesn't look bad on a resume.

And as IT establishes a more strategic role in health care organizations, the job of the CIO is becoming increasingly critical. CIOs must exhibit a combination of business and technology skills and balance the needs of both sides of the house.

To succeed, the CIO must find ways to work around health care's historic compensation shortcomings, and that means finding clever and constructive ways to land talent. Convincing them that taking less money to work on challenging projects is one well-worn approach. Making it work is something else.

Just how successful health care will be in its aggressive recruiting remains to be seen. But one thing is sure: Health care is no longer a technology backwater.

Amy Malloy

STAFF: Editor: Alan Alper; **Project Editor:** Amy Malloy; **Art Director:** Mary Beth Welch; **Copy Editor:** Monica Sambataro; **Contributing Writers:** Sharon Watson, Mark Hagland and Rick Saia; **Computerworld Editor:** Paul Gillin; **Production Manager:** Beverly Wolff; **Traffic/Graphics Coordinator:** Kim Pennett

Cover photo: Tim and Kim Furnald/Gray

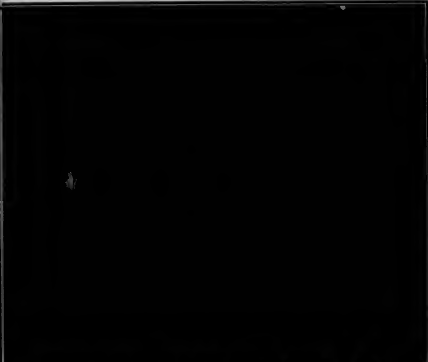
CHANGING PERCEPTIONS

LONG KNOWN AS A TECHNOLOGY LAGGARD, HEALTH CARE ENTICES HIRES WITH NEW TECHNOLOGY

Like most other information sciences soon-to-be graduates at the University of Wisconsin at Parkside, Julie Naydiber was sought after by several companies during a campus recruiting fair. And she was intrigued by at least two of them. But only Allegiance Healthcare Corp. called her back for a follow-up interview within 24 hours, made her an offer before the next 48 hours were up, arranged for her to visit the company's facilities in McGaw Park, Ill., and essentially let her choose her job.

"They let me decide which group was the better fit for me," says Naydiber, who joined Allegiance in January 1997 as an associate program analyst. During her visit to the company's headquarters, Naydiber spent several hours with IT employees, watching them work and being introduced to the company's applications. She also went to dinner with managers from the two departments that wanted to hire her. "I wasn't thrown into something that didn't interest me," she says.

By Sharon Watson



Naydihor's story illustrates the IT recruiting principles of many health care organizations: Grab good prospects fast, and then keep them happy.

The stakes are high. Information technology, once relegated to patient financial systems, is now at the forefront of health care in the form of computerized patient records, online disease management protocols and clinical pathways, clinical and financial data warehouses, automated materials management systems and more.

The point of all the technology is to fulfill the promise of managed care by making health care efficient enough to deliver high-quality care at lower costs. But while providers and other health care organizations need to build new technological infrastructures, recruiters and consultants agree there's a shortage of experienced talent.

Health care ranks third among industries expecting the largest increase in IT staffing. The industry projects a 3.1% increase in permanent staff size in the next three months and a 14% increase within the next year, according to *Computerworld's* July 1998 quarterly hiring survey [CW, July 6].

HOT SKILLS

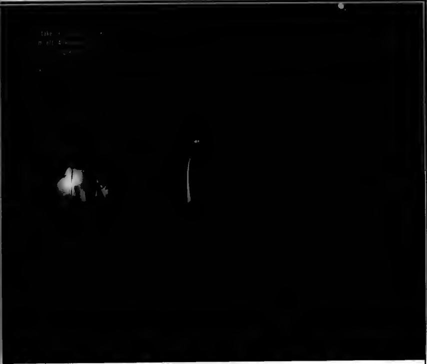
"We're competing with all the other technology and vendor firms for talent," says Kathy Brittain White, senior vice president and CIO at Allegiance. The company is completing an installation of SAP AG's R/3, moving to Windows NT and working with Oracle Corp. and Business Objects, Inc. "There are no cold skills. Even Cobol is hot," she says.

In addition to Cobol — which is needed to tackle year 2000 issues and, in some cases, to maintain legacy systems — the industry is in particular need of networking, Windows NT and client/server experience, say recruiters and industry CIOs.

Project management and clinical expertise also are in demand, says Linda Hodges, executive vice president at Hersher Associates Ltd., a health care

Continued on page 4

MARK BERLOW



MARK BERLOW

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Continued on page 4

Continued from page 3

recruiting firm in Northbrook, Ill.

To compete more effectively for such talent, health care recruiters are increasing their visibility on college campuses, dedicating human resources staff to IT recruiting, streamlining the recruiting process and increasing salaries.

"We may be competing with companies like SAP, but if we can just get recruits in the door, they see that we're just as driven by IT and that they'll be working with very advanced technology," says Elizabeth Bean, corporate recruiting manager at NovaCare, Inc. in King of Prussia, Pa.

Several IT staffers relatively new to health care or who have moved from one health care organization to another agree that the opportunity to work with cutting-edge technology was crucial to their career decision. For example, Naydihor is working on a new just-in-time materials management system as part of Allegiance's SAP implementation. She also uses Visual Basic 3.0 and SQL Server and will help develop a Web-based supply-ordering electronic commerce system designed for physician practices. "There are opportunities in health care that you don't find anywhere else," agrees Stephen Smith, manager of clinical systems at the University of Pennsylvania Health System (UPHS) in Philadelphia.

'T MAKE
TAKE OF
ING IN
E JUST
USE
Y'RE
HING."

Griggs,
HS

With 10 years of IT experience at the Medical Center of Delaware, Smith was sought after both inside and outside the health care industry. He chose the university even though its systems were 10 or more years out of date because he knew he'd have the opportunity to build new ones from the ground up.

"I have an opportunity to make a much bigger impact here than I would elsewhere," Smith says. To give prospects a taste of the technical opportunities health care offers, Allegiance is developing an on-campus virtual internship program, says Stacy Cox, human resources manager for the company's IT department.

The company will select up to eight students to work on Allegiance projects throughout the school year via workstations it will install in a "virtual technology center" on campus. Allegiance will conduct a pilot program at Arkansas State University this fall. The hope, Cox says, is that the participating students eventually will become Allegiance employees.

HIGH PRIORITY

As further evidence of IT's strategic importance, many health care organizations have followed the lead of other industries and now have a human resources staff person who specializes in IT. Stacy Griggs, human resources generalist at UPHS, manages all human resources activities for the IT department, including compensation packages, and he consults on department organization.

"It sends a message that my office is just 50 feet away from our CIO's," he says.

Fast turnaround on IT resumes and interviews is also becoming the norm. At NovaCare, people submitting IT resumes receive responses within 24 hours, and if interviewed, they receive a response also within 24 hours, says Jean Donato, a recruiter for the company's support services.

"Qualified candidates are on the market for just one to two weeks at best," she says. "We have to attract them and make offers much more quickly now."

In general, recruiters say they don't use the Internet much in their recruiting efforts, preferring instead to cultivate networks of personal contacts they can use to identify candidates.

Whether offers made by health care

KIM AND TIM FURNALD/GRAY

organizations to IT prospects can compete with those made outside the industry is unclear. Health care ranks the lowest of nine industries in pay scale, and that's a difficult obstacle to overcome, says Daniel Vogel, vice president, health care information technology strategies, at Meta Group, Inc. in Stamford, Conn.

"There's a big sucking sound coming from the hospital side as they lose people to vendors and other industries," he says.

Provider pay scales may lag for several reasons. Vogel cites the generally accepted statistic that most providers spend just 1% to 3% of their revenue on IT investment, compared with as much as 9% in other industries.

Other sources suggest that human resources staff who don't understand the vital new role of technology in health care may also contribute to the problem. "Almost all of our clients have had to work closely with their HR staff to address salary issues," Hodges says.

But many providers say they have yet to see health care-specific vendors dare to raid their staffs for fear of souring important business relationships. And sometimes talent flows from the vendor to the provider.

That's been the case at Winchester Hospital in Winchester, Mass., where Michael Gogola, vice president and CIO, has attracted people from Medical Information Technology, Inc. (Meditech), his hospital information systems vendor, as well as other health care organizations.

Gogola says Meditech hires many new graduates, some of whom put in time at his site and are attracted to the technologies he's implementing, including handheld devices and data warehouses. They also act as an informal recruiting network with other classmates and Meditech peers, he says.

Health Care IT Salaries

Average total compensation
(Salary and bonuses)

CIO/VP of IS/IT	**$104,000**
Director of networks	**$76,000**
Director of IS/MIS	**$74,000**
Director of systems development	**$72,000**
Director of IS operations	**$64,000**
Project manager	**$59,000**
Project leader	**$57,000**
LAN manager	**$56,000**
Senior systems analyst	**$55,000**
Senior systems programmer	**$54,000**
Database manager	**$54,000**
Programmer/analyst	**$43,000**

Source: Computerworld's 1998 Salary Survey

In slightly more than a year, Gogola has rebuilt the hospital's IT department from the ground up, replacing consultants with about thirty staffers. When necessary, he makes salary adjustments to ensure parity between the newest recruits and existing staff.

"Those adjustments are economical compared to the cost of recruiting and training a new hire," Gogola says.

Some providers also argue that their compensation packages are now on a par with any other industry. "IT has moved up on the strategy ladder as far as integrated delivery systems are concerned, so we've been able to offer more competitive compensation packages," says Matthew Calais, CIO at Legacy Health System in Portland, Ore.

Health care organizations are optimistic that recognition of health care's financial and professional opportunities will come.

"Technology has changed the way we deliver health care," Gogola says. "It's going to be important."

Watson is a freelance writer in Chicago

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KEVIN MONKO

But now, as providers build integrated delivery systems to link hospitals, clinics and physician practices in a continuum of care, they're looking to CIOs to help lead the way.

"CIOs are now being recognized as an integral part of the executive team," says Ward Keever, CIO at the University of Pennsylvania Health System (UPHS) in Philadelphia. "It's now up to us to make certain that we provide the electronic glue that helps to hold an integrated delivery network together."

It's not surprising, given these requirements, that organizations are changing the criteria by which they select CIOs. A shepherd of application implementations isn't enough. Instead, they require someone who can hold his own as a member of the executive management team, as well as with chief medical officers and CIOs at affiliated institutions, recruiters and consultants say.

"If there's a disconnect between the CIO and the rest of the 'O' team — the CEO, COO, CFO — then the CIO is seen as a cost center and as a specific project implementer," says Daniel Vogel, vice president, health care information technology strategies, at Meta Group, Inc. in Stamford, Conn. "You want to be viewed as someone with a vision that can help change the organization," he says.

It's not clear whether a CIO needs previous health care experience to be a successful visionary in the industry today. Health care CIOs say CIOs in any industry have the basic business skills necessary to survive in health care.

However, many providers are looking for CIOs with health industry experience to eliminate the six-month to one-year learning curve most CIOs from nonaffiliated industries face, says Linda Hodges, executive vice president at Hersher Associates Ltd., a health care IT recruiting firm in Northbrook, Ill. "We hear from many clients that they would like to look outside the industry for candidates, but they're

Continued on page 9

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Source: Hersher Associates Ltd., Northbrook, Ill.

Continued from page 7

in the midst of so much change that they feel they don't have time for such a long learning curve," Hodges says.

CIOs also say it's possible for technical staff to rise through the ranks to become a CIO, as long as they have the aptitude for the myriad aspects of the position.

VISION QUEST

Whatever their origins, health care CIOs are quick to agree that they must be strategic thinkers, even visionaries, to earn the respect of their IS departments. "You must understand the business you're in and show how you'll deliver strategic value to the organization," says Steve Wise, senior vice president and CIO at NovaCare, Inc., a national health care services company in King of Prussia, Pa.

Wise, for example, led the creation of a 1,500-site network that provides managers with daily data feeds of clinical, financial and outcome measures from a central repository to evaluate practice performance. The company also uses aggregated statistics for planning, marketing and business development. "We aligned the system with the company's business needs," Wise says.

Once a successful alignment is achieved, the CIO must constantly remind people of IT's role in the success, Wise says. Such communications skills — in particular, the ability to distill complex IT implementations into clear, strong explanations of how the technology will benefit the organization — are invaluable, CIOs say. In addition, building good relationships with other senior executives is vital.

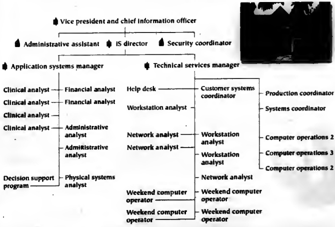
CIOs also must forge good working relationships with the CIOs of organizations with whom their parent organizations affiliate, such as physician practices, providers and payers. But of all these relationships, the one between the CIO and the CEO is the most critical.

"Your CEO must be someone who understands that technology provides strategic value," Wise says.

Continued on page 11

Small Doesn't Mean Simple

Winchester Hospital in Winchester, Mass., is a 165-bed hospital, but with its outpatient clinics and affiliated hospitals, it operates more like a 500-bed facility, says Michael Gogola, vice president and CIO. Here's a look at its IT organizational chart.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Top Attributes

Here's what CIOs, consultants and recruiters say the perfect health care CIO should be:

- **LEADER:** Hold own with senior management, including key medical staff and CIOs at affiliated institutions.
- **VISIONARY:** Develop a compelling but practical technology vision, create administrative efficiencies and help the organization thrive.
- **TRANSLATOR:** Present technological applications in terms of strategic deliverables.
- **COACH:** Mentor and motivate IT staff.
- **POLITICIAN:** Build solid relationships with various constituencies, including physicians and CIOs at affiliated organizations.
- **SOOTHSAYER:** Make right calls on where to spend limited capital dollars.

KEVIN MONKO

Continued from page 9

The CIO and CEO must also come to an understanding about accountability, CIOs say. UPHS's Keever talks about the importance of having a covenant-style relationship with his CEO as compared with a contractual one.

Keever says he also tries to build covenant-based relationships with his staff in the sense that he supplies vision and strategy and then allows his IT directors and their personnel to implement them with minimal scrutiny. "My job is to create an environment in which people excel beyond their abilities," he says.

Other CIOs echo Keever. "I act as a mentor or coach," Wise says. "I want to let my people work and build relationships with their constituencies, too."

That wide scope is necessary for setting priorities for IT projects — a key success factor for health care CIOs, they say. "The demand for IT exceeds the dollars available, as well as the ability to digest change," says John Glaser, senior vice president and CIO at Partners Health-Care System, Inc. in Boston. "The CIO has the challenge of juggling and prioritizing to reach a balance that is supportable."

Balancing health care's huge backlog of IT projects with available dollars limited by decreasing reimbursements and cost pressures is one of their greatest challenges, CIOs agree. First, they warn it's important not to raise expectations that IT's main goal is to lower costs. "There's a lot more to be gained," Wise says, in terms of greater efficiencies, higher quality patient care and stronger market positioning. Most CIOs say IT costs must first increase before the organization can benefit, a legacy of health care's past underinvestment in IT.

Also, many health care IT projects are extraordinarily complex, so CIOs must try to focus on those aspects of an application that will have the greatest impact in the shortest time. "Health care easily has five times the number of applications that other industries have," Vogel says.

The applications and the sheer amount of raw data that even a single patient-physician encounter can create in terms of sets of combinations of physical conditions, pharmaceutical prescriptions, test results and outcomes are staggering. "The nature of the data makes it exceptionally difficult to computerize," Glaser says.

Further, CIOs of integrated delivery networks are creating master patient indexes, such as unique patient identifiers, that will function in every entity in the network — from physician office to hospital to outpatient center.

Many also are tackling computerized patient records or data warehouses that draw data from dozens of proprietary systems in settings ranging from labs to supply warehouses to business offices. So as their staffs try to span technical gaps, network CIOs say they find themselves leading efforts to build strategic bridges among heterogeneous working cultures and other information officers.

Given these challenges, it may be tempting to try to lure away a successful CIO from another institution. Before making an offer, though, keep in mind that perfection is relative, CIOs caution.

"You must match the goals of an organization and its culture with the goals and character of a CIO," Keever says. "There are places in which I would not be as successful as I would be at Penn [Health System]."

Watson is a freelance writer in Chicago.

PREVEN DATA CARE

Nancy Earnley is a member of an elite group: health care information security officers. Their job is to ensure the privacy, confidentiality and security of individual patient and plan member health information held by hospitals, physician groups, health plans and indemnity insurers.

Just a few years ago, Earnley's job — corporate manager for confidentiality and data security at Partners HealthCare System, Inc. in Boston — was almost unheard of. Today, experts say only a few hundred health care security specialists are working actively nationwide. But within a few years, they say, most health care organizations of any size will need people like Earnley, which means potentially several thousand new positions.

There's an increasing need for health care data security, but finding qualified people like Nancy Earnley is no easy task

A host of factors is pushing the mushrooming development of health care SWAT teams. A primary one is a sudden realization of the need for IS security strategies at hospitals, physician organizations and managed care organizations. As medical records go electronic, providers and payers share more and more clinical information across a wider group of users.

By Mark Hagland

TIVE

Most of all, security specialists will be in great demand as the federal government moves toward implementing health information privacy, confidentiality and security regulations mandated by the Health Insurance Portability and Accountability Act (HIPAA) of 1996. It calls for criminal penalties and fines for violations of patient confidentiality (though specific sanctions haven't been codified).

Still, the need for people like Earnley doesn't mask a few distinct core challenges facing hirers of security specialists. Finding qualified people is difficult, the job comes with a steep learning curve, resources and upper-management support are lacking, and the job description is ambiguous.

DAVID ZADIG

To date, most security specialists are coming from two areas: Half are recruited from medical records, and most of the other half come from the IS department, according to Mary Brandt, a consultant at Seal Beach, Calif.-based Pyramid Health Solutions, a consulting firm that specializes in health information security. A few are from risk management.

Earnley comes from the medical records department at Partners HealthCare. She works with a [illegible] committee to develop policies and procedures around enterprise system security. On almost a consulting level, she works with IS staff to develop rules of confidentiality as they begin to roll out a clinical data repository and longitudinal medical records. And she's involved in assessing the process for releasing patient records on request, which needs streamlining at Partners HealthCare, as elsewhere.

Another security specialist, Micki Krause, says there are three main components to her job. She is director of information security at Santa Ana, Calif.-based PacifiCare Health Systems, a national health plan she joined after managing information security in the retail, manufacturing and aerospace fields.

She works with health plan and access control administrators on data access issues; manages and develops security policies and procedures; and works with IT staff to build security into the network, applications and operations. Though excited about her job, Krause says there's a lot to do, partly because health care is so far behind in IT and information security compared with the other industries she's worked in.

Interestingly, health information security officers don't cite technical issues as their biggest challenges. "The biggest challenge is to get all the stakeholders to understand what their responsibility is in supporting the security program," Krause says.

Earnley agrees. "In any other business, like banking or in an accounting department, you would not think twice about automating the accounts receivable process. But in hospitals, we have to jump through a lot of hoops to justify the electronic medical record and the confidentiality and security that goes all around that," she says.

Hiring Challenges

- **Qualified staff:** no obvious path for finding these people or determining who is qualified.
- **Progress delay:** organizational politics, lack of dedicated resources or commitment from the top and steep learning curve.
- **Job definition:** unclear whether it is policy development, operations implementation, assessment/analysis or a combination of all three.

"Fortunately, Partners is . . . very supportive of patient confidentiality and security," Earnley says. It recognizes the extremely high potential for high-payout lawsuits if data is not properly secured, she adds.

Finding and holding on to good security managers is important, but it's expected to be a problem. The number of people with any qualifications is so small that it's really a seller's or job seeker's market.

In most cases, "new" health information security officers are being hired and developed internally, based on their institutional knowledge. But they tend to be kept at a department manager level. Pay also hovers at about that level, which varies across health care sectors and organizations but tends to run from about $55,000 to $75,000, depending on location as well as size and type of organization, experts say.

Though pay and job qualifications vary, certain qualities are essential for all security specialists. "The successful health information security officer has to be a patient advocate, someone who feels passionate about privacy and confidentiality. But [that person] also has to understand the technical aspects of how all this can be accomplished," Earnley says.

Hagland is a freelance writer in Chicago.

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Hagland is a freelance writer in Chicago

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UCSF Stanford Health Care	Fax: 415-514-4399	Page 17
Colorado		
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Connecticut		
Aetna	www.aetna.com	Page 8
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Kansas		
Elumen Solutions, Inc.	800-383-1562	Pages Inside front cover, 10
Kentucky		
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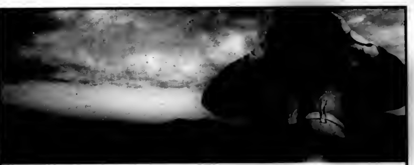

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Briefs

[illegible]

X-rays drive hospital upgrade

▸ *Hospital puts new medical systems online*

By Barb Cole-Gomolski

TRINITY MEDICAL CENTER recently installed a high-bandwidth network, but it isn't new applications that the hospital is making room for. It is the increasingly digital hospital equipment — such as X-ray and heart-monitoring machines — that is eating up bandwidth.

NETWORK UPGRADE

Over time, those digital machines will let the Rock Island, Ill., health care provider create an integrated, electronic file of patient records available to anyone in the organization. The company is housed in three buildings and spread out over several miles.

Along the way, the digital devices running on an Asynchronous Transfer Mode network will help improve care and make it easier for health care professionals to do their jobs, said Will Weider, Trinity's chief information officer.

So critical was the network overhaul that it took precedent over the year 2000 project, which the hospital expects to complete soon.

"Our key strategy is to work with physicians to make their lives as easy as possible," Weider said. If doctors can pull up patient information quickly and even access it from home, it might help the hospital retain good physicians, he said.

There is an archival issue, too. Although digital patient information takes up space on the network, it also frees up square footage in the facility. "Today, we spend a couple hundred thousand dollars a year on archiving," Weider said. As medical records go digital during the next few years, Weider said, he expects that the hospital will eliminate those costs almost completely.

The hospital is also eyeing new applications, including a videoconferencing system to let Trinity's mental health professionals provide psychiatric services to rural facilities.

Still, the driving force behind installing the 3Com Corp. network was the networked med-

Hospital, page 47

The Philadelphia Stock Exchange is saving millions by testing production data mirrored to a storage environment

Testing Y2K on mirror site saves for exchange

By Thomas Hoffman

MOST ORGANIZATIONS that have already started testing their computer systems for year 2000 readiness have either set up a test environment with duplicate equipment or have partitioned off part of their mainframes for testing.

Those approaches were designed to keep businesses from shutting down production systems for testing. But buying or leasing duplicate equipment can cost millions of dollars, and no matter how much money a company spends, test environments can never duplicate all the quirks of the production system.

Information technology professionals at the Philadelphia Stock Exchange think they have found an answer somewhere in the middle. For the past six months, the exchange has been

Testing Y2K, page 47

FedEx API tactic promising but risky

By David Orenstein

IF USERS IN other markets follow the leaders in package delivery, the popular new way to interface with customers will be to distribute application programming interfaces (API) to internal business applications.

FedEx's Michael W. Janes: Tight links with customers make electronic commerce easier

Federal Express Corp. earlier this month released a set of package tracking and shipping APIs that will link corporate networks, intranets and World Wide Web sites directly to internal FedEx applications that hold shipping status information. United Parcel Service of America, Inc. has been shipping its own Web APIs for more than a year and offers tools to integrate other systems as well.

Such tight links with customers' systems can make electronic commerce easier and faster, said Michael W. Janes, FedEx's vice president of marketing for logistics and electronic commerce.

Meta Group, Inc. analyst Kip Martin said FedEx, UPS and American Express Travel Services, which also has released APIs for travel booking, are forerunners of a coming trend in electronic commerce toward application integration.

But Martin cautioned that companies that release APIs with little technical support may face a backlash from users, and companies that implement the APIs face substantial costs if they choose to rip them out later. FedEx and UPS provide some technical support.

The newly launched Proflowers.com, Inc., an online flower retailer in La Jolla, Calif., is

FedEx, page 47

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Employment outlook by region

Percentage of U.S. companies by region that will add to their workforce in the fourth quarter of this year

Northeast	24%
Midwest	30%
South	31%
West	30%

Base: 16,000 U.S. companies in public and private sectors

Source: Manpower, Inc., Milwaukee

Online education

Stanford University later this month will begin offering its first completely online master's degree program in electrical engineering. The online classes will coincide with those on campus.

Web credit

First USA, Inc. in Dallas has begun processing Internet credit-card applications using an online credit-card management system from Destiny Software Corp. in Conshohocken, Pa. First USA, a subsidiary of Banc One Corp. in Columbus, Ohio, is among the largest providers of credit cards in the U.S. with more than 43 million cards issued.

Fashion accounting

Fashion retailer Nordstrom, Inc. is installing accounts payable software from Raleigh, N.C.-based QSP, Inc. Officials at the Seattle-based retailer expect the IBM MVS-based QSP system to provide a more efficient payment process and better reporting capabilities than the accounts payable system the company is replacing.

Legal tech support

DecisionOne Corp. in Frazer, Pa., and Integrated Technologies Management Corp. (ITM) will offer technology integration and support services to law firms. DecisionOne will provide hardware support and project-oriented installation services with ITM personnel.

X-rays drive hospital upgrade

▸ *Hospital puts new medical systems online*

By Barb Cole-Gomolski

Trinity's Will Weider: The ATM network will help improve care and make life easier for health care professionals.

NETWORK UPGRADE

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So critical was the network overhaul that it took precedent over the year 2000 project, which the hospital expects to complete soon.

"Our key strategy is to work with physicians to make their lives as easy as possible," Weider said. If doctors can pull up patient information quickly and even access it from home, it might help the hospital retain good physicians he said.

There is an archival issue, too. Although digital patient information takes up space on the network, it also frees up square footage in the facility. "Today, we spend a couple hundred thousand dollars a year on archiving," Weider said. As medical records go digital during the next few years, Weider said, he expects that the hospital will eliminate those costs almost completely.

The hospital is also eyeing new applications, including a videoconferencing system to let Trinity's mental health professionals provide psychiatric services to rural facilities.

Still, the driving force behind installing the 3Com Corp. network was the networked med-

Hospital, page 47

The Philadelphia Stock Exchange is saving millions by testing production data mirrored to a storage environment

Testing Y2K on mirror site saves for exchange

By Thomas Hoffman

MOST ORGANIZATIONS that have already started testing their computer systems for year 2000 readiness have either set up a test environment with duplicate equipment or have partitioned off part of their mainframes for testing.

Those approaches were designed to keep businesses from shutting down production systems for testing. But buying or leasing duplicate equipment can cost millions of dollars, and no matter how much money a company spends, test environments can never duplicate all the quirks of the production system.

Information technology professionals at the Philadelphia Stock Exchange think they have found an answer somewhere in the middle. For the past six months, the exchange has been

Testing Y2K, page 47

FedEx API tactic promising but risky

By David Orenstein

IF USERS IN other markets follow the leaders in package delivery, the popular new way to interface with customers will be to distribute application programming interfaces (API) to internal business applications.

FedEx's Michael W. Janes: Tight links with customers make electronic commerce easier

Federal Express Corp. earlier this month released a set of package tracking and shipping APIs that will link corporate networks, intranets and World Wide Web sites directly to internal FedEx applications that hold shipping status information. United Parcel Service of America, Inc. has been shipping its own Web APIs for more than a year and offers tools to integrate other systems as well.

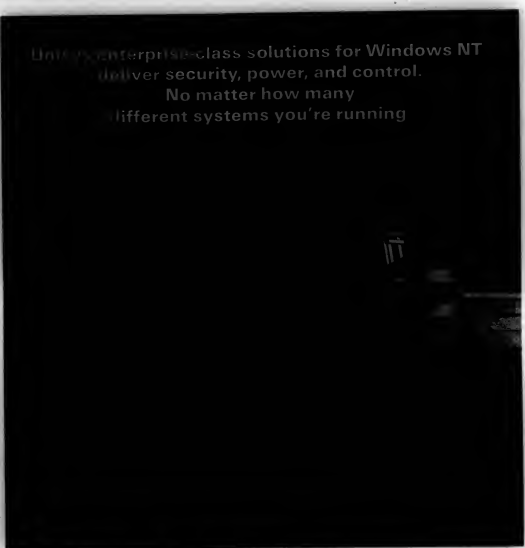
Such tight links with customers' systems can make electronic commerce easier and faster, said Michael W. Janes, FedEx's vice president of marketing for logistics and electronic commerce.

Meta Group, Inc. analyst Kip Martin said FedEx, UPS and American Express Travel Services, which also has released APIs for travel booking, are forerunners of a coming trend in electronic commerce toward application integration.

But Martin cautioned that companies that release APIs with little technical support may face a backlash from users, and companies that implement the APIs face substantial costs if they choose to rip them out later. FedEx and UPS provide some technical support.

The newly launched Proflowers.com, Inc., an online flower retailer in La Jolla, Calif., is

FedEx, page 47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Testing Y2K on mirror site saves for exchange

CONTINUED FROM PAGE 45

testing production data that's mirrored in real time to a remote Sungard Data Systems, Inc. disaster recovery facility.

The EMC Corp. Symmetrix Remote Data Facility the stock exchange has been using since September 1996 makes it possible to test the systems for procedures such as executions of stock trades as they are being processed.

That means the exchange doesn't have to simulate such tests at night or on weekends.

And because the exchange already owns the duplicate IBM OS/390 environment housed at Sungard, it is "saving millions of dollars" because it doesn't need to buy duplicate test equipment, said Frank Reidy, a first vice president at the stock exchange, which is being acquired by the National Association of Securities Dealers in Washington.

Part of the exchange's cost savings stems from the fact that it doesn't have to pay year 2000 team members to work nights or weekends, said Reidy, who wouldn't say how much the mirroring service costs.

And the stock exchange doesn't pay extra for the test time because testing uses system time that is already paid for, said a spokesman for Wayne, Pa.-based Sungard. The exchange is the only Sungard client using the system in this way.

Still, Reidy acknowledged that the use of the Sungard/EMC mirrored environment for year 2000 purposes "was a nonplanned type of thing." The exchange became a beta-test site for the Sungard/EMC service in 1996.

Stephanie Moore, a year 2000 analyst at Giga Information Group in Westport, Conn., said she has clients who are renting space from Sungard and Rosemont, Ill.-based Comdisco, Inc. to run millennium tests.

"But I haven't come across anyone" who is testing applications against mirrored, real-time production data in those environments, she added.

With more weekday hours to test remediated code, the exchange has been able to test 60% of its mission-critical systems and put them back into production, said Bruce Smith, chairman of the exchange's year 2000 task force.

That puts the exchange on schedule to get the rest of its systems fixed and re-entered by year's end so that it can devote all of next year to industrywide testing among brokers, clearinghouses, and other stock exchanges, Smith added. □

Hospital upgrade

CONTINUED FROM PAGE 45

ical equipment. For instance, Trinity is installing new monitoring machines that will be used to conduct sleep studies. "It's all PC-based, and the studies are digitized," Weider said. "There's a tremendous advantage to being able to send that information anywhere on the network."

The movement to digital medical equipment will force a lot of hospitals to consider network upgrades, said Deborah Kohn, a principal at DAK Systems Consulting in San Mateo, Calif. "But it may not be their biggest priority because they are so preoccupied with year 2000 projects," she said.

Gail Arnett, executive director of the College of Healthcare Information Management Executives Foundation in Ann Arbor, Mich., agreed that larger facilities are likely to face network upgrades. However, she said it is likely to be less of an issue at single-site hospitals that don't need to share patient information across expansive campuses. □

FedEx API tactic promising, risky

CONTINUED FROM PAGE 45

basing its whole business on a custom system linked to FedEx's APIs, said Proflowers President Bill Strauss.

FLOWER POWER

Once a customer has ordered a bouquet, Proflowers retrieves shipping information, including a bar code from FedEx. The bar code is automatically faxed to a flower grower. The grower puts the flowers in a FedEx box with the fax inserted in the airbill sleeve with the bar code visible, and the flowers are sent. Customers can track the order from the Proflowers site or read E-mail updates.

And tying into UPS'a system lets MWI Veterinary Supply Co. in Nampa, Idaho, respond more quickly to customers because tracking information appears on the green-screen terminals of its telemarketers, said Steve Nelson, the $100 million firm's operations director.

But Duncan Van Dusen, vice president at Brielle Executive Gifts in Brielle, N.J., said his company has declined the chance to hook up with UPS because customers wanted features such as better catalog searches, not UPS tracking, he said.

"If we're going to go through that kind of pain, we want to see a real home run for our customers," Van Dusen said. □

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Briefs

Internet media companies' stock market capitalization

August 1995	$1.4B
July 1998	$107B

Source: Paul Kagan Associates, Inc., Carmel, Calif.

Wireless Exchange

San Mateo, Calif.-based Consult Corp. has announced Alteron 1.0, a tiny, wireless Microsoft Corp. Exchange client designed for two-way paging devices such as Motorola, Inc.'s PageWriter 2000. It lets users retrieve Outlook data, such [illegible] E-mail, tasks, calendars, contacts and notes, from any [illegible]cation. They can transmit [illegible] es and take messages [illegible] third-party software. Information is secure because it is stored on the Exchange server rather than the paging device. Pricing starts at $499 per user. It will be available next month.

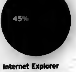
Electronic routing

Ottawa-based JetForm Corp. has announced FormFlow 99, an upgrade to its workflow software that will let users route electronic forms to any browser-enabled desktop. Priced at $7,900 for 100 users, it will be available Oct. 31.

BROWSER UPDATE

Percentage of companies that specify a browser for employees: 64%

Preferences of those that specify a browser:



- Internet Explorer
- Netscape Navigator

Base: Survey of 280 North American companies

Source: Zona Research, Inc., Redwood City, Calif.

Keeping up with Starr

▸ *Sites struggled, but met crush of report traffic*

By Sharon Machlis

HOW DO YOU handle your biggest-ever World Wide Web traffic surge?

Information technology executives who wrestled with the crush of people seeking the Starr report said it was another in a string of valuable, on-the-job Internet lessons.

"I would say we learned a great deal under that kind of stress ... that is difficult to duplicate in a laboratory," said Jaan Vaine, director of business development and administration at CBS Corp. in New York. At the CBS News Web site, traffic loads occasionally were 100 times higher than anything the site had experienced before when the report was released on Sept. 11.

"Not all spikes are the same," noted Monty Mullig, vice president for Internet technology at Cable News Network (CNN) in Atlanta. "You need instruments on all the places where resources are likely to become scarce."

Sometimes bottlenecks result from server-compute power that can't handle the load. In other cases, the limit may be bandwidth-related — as was the case with the 445-page Starr report.

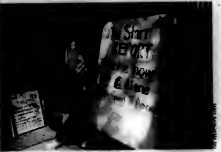
Although the file itself was only about 450K bytes, a DS3 line (at 44M bit/sec.) handles roughly 155 downloads at a time, Mullig said. If each user downloaded the whole report, thousands of others couldn't get through. One solution, used by many sites posting the report: break up the file into smaller pieces, of roughly 40K bytes each to let more people gain access at the outset.

CNN also kept its advertising up by using a sister site to serve up ads, preventing a further drain on its resources.

Major news sites typically strip down their main pages when a hot story breaks. That not only cuts needed bandwidth because large graphics files are gone, but also eases server load by cutting down the number of objects on the page. Each Hypertext Markup Language (HTML) object requires a separate "hit" to the server.

"We gradually reduce the weight of our page as we see it coming," Mullig said. At the height of the Starr report traffic, CNN's home page was only 25K bytes — the usual is 150K bytes — and the usual two dozen

Starr, page 50



This sign outside Alan's Computer Cafe in Upper Montclair, N.J., beckoned Web surfers inside for an online look at Kenneth Starr's salacious report on President Clinton's conduct

Tool pushes corporate data

▸ *Tibco products automate info updates*

By Johanna Ambrosio

TIBCO, INC. is getting pushy. Again.

With two new products, the vendor is jumping on what it said is the next wave of push technology — taking corporate data out of systems management and other behind-the-scenes products and pushing the information to users' desktops.

PUSH TECHNOLOGY

Last year's first wave — pushing customized information, such as reports on favorite sports teams' scores to end users — didn't fare well because users were overwhelmed, and the technology overtaxed most networks. The new technology allows, for example, salespeople to subscribe to information about pricing changes, new service and support options and earnings reports about their own companies or prospect accounts. A sales manager could also request alerts when any order more than $500,000 arrives from anywhere in the U.S.

Unlike traditional reporting tools, Tibco's don't require users to initiate the reports, said product manager Tim Hickman. However, the Tibco tools don't let users query on their own; users still need traditional reporting and data-access tools to

Corporate data, page 50

THE HOME DEPOT, INC.

- Founded: 1978
- Headquarters: Atlanta
- Net sales: $24.2 billion (fiscal year 1997)
- Stores: 695
- Employees: 165,000
- Programmers: 360 to 400

Home Depot makes Java a fixture

By Carol Sliwa

MANY companies merely dabble in Java, but The Home Depot, Inc. has made a strong commitment to the 3-year-old programming language and the Common Object Request Broker Architecture (CORBA) for distributed computing.

The Atlanta-based retailer eventually hopes to have all of its 360 to 400 in-house programmers using Java, which was created by Sun Microsystems, Inc. Right now, 130 have been trained, and 60 are active Java developers, according to Home Depot's Mike Anderson, vice president of information services. "I'm hoping [Java] lives for 10 to 15 years," Anderson said. "That's our goal."

Fourteen months ago, Home Depot turned to Java with the following goals in mind: to write applications that can run across multiple platforms, inter-

Home Depot, page 50

World Wide Wait

The average time, in seconds, to download a home page from one of 40 business-related Web sites during business hours for the week of Sept. 7:

Top 5 best-performing Web sites	
AltaVista	2.75
Yahoo	2.76
Sprint	3.44
Infoseek	3.48
Hewlett-Packard	3.64

Best areas to Web surf	
Milwaukee	3.63
Pittsburgh	4.00
Boston	4.18

Worst areas to Web surf	
Columbus, Ohio	11.61
Phoenix	11.58
Philadelphia	9.85

Source: Keynote Systems, Inc. (www.keynote.com), San Mateo, Calif.

Internet Commerce

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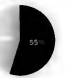

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Yehoo	[illegible]
Sprint	[illegible]
Infoseek	[illegible]
Hewlett-Packard	[illegible]

Source: Keynote Systems, Inc. (www.keynote.com), San Mateo, Calif.

Best areas to Web surf	
Milweukee	[illegible]
Pittsburgh	[illegible]
Boston	[illegible]

Worst areas to Web surf	
Columbus, Ohio	[illegible]
Phoenix	[illegible]
Philedelphia	[illegible]

Starr report

CONTINUED FROM PAGE 49

objects were trimmed to two.

CBS switched from dynamic HTML to "flat" HTML, reducing system load by eliminating direct calls to an Oracle database, and attempted to reconfigure some systems on the fly.

QUERY BACKUP

Yet another potential bottleneck comes from database queries, either within the same organization or from a server via the Internet.

"If you're linking to other sites, make sure you buffer that," said John Nicol, technical director at MSNBC, a joint venture between National Broadcasting Corp. and Microsoft Corp. "You don't want your site to go down because your queries to another site are backed up."

Instead, a separate server could be performing those queries, while the Web server then gets the latest available results. Another option: Older information can be cached until updates are available.

For the U.S. government sites used as "official" posting areas for the Starr report, "there's not a lot you can do when you've only got a day's notice or so," said Herbert Becker, director of information technology services at the Library of Congress.

Becker decided to use a separate, more powerful server to handle the Starr report.

Nevertheless, a system that typically deals with 9 million transactions per month was somewhat overwhelmed by 3.9 million in one day, with many connection attempts failing on the Friday afternoon that the report was released.

The Internet Traffic Report, published by Andover.Net in Acton, Mass., estimated that packet loss at the site topped 80% during the worst periods of the Internet crush. □

STARR GAZING

Site	[illegible]	[illegible]
House of Representatives	11.85 seconds	48%
MSNBC	2.27 seconds	4%
CNN	5.75 seconds	12%
The New York Times	4.55 seconds	4%
The Wall Street Journal	3.80 seconds	1%
USA Today	9.51 seconds	1%

* [illegible]

Source: Keynote Systems, Inc. (www.keynote.com), San Mateo, Calif.

Home Depot, Java

CONTINUED FROM PAGE 49

operate with applications written in other languages and let all of its programmers develop in the same language and leverage off the same infrastructure. Despite some early hurdles, Home Depot is finding that Java is working as planned. The company has at least three key Java applications running:

- A Virtual District Office that allows district managers to view store-performance reports, which are presented in Hypertext Markup Language through World Wide Web browsers.
- A customer service form that lets the company rent out trucks to customers using a graphically oriented Java application to fill out the contract. Novera Software, Inc.'s JBusiness application server sits in the middle tier.
- An Employment Application Kiosk that lets a prospective employee watch a video, take a test and fill out an employment form through a Java application. Managers can access resumes and even activate employees through the Java application.

Home Depot programmers break up the code into a thin presentation layer on the client, putting business logic in the middle tier and data access objects on the back end, Anderson said.

Although other companies have been hesitant to take the plunge, Home Depot embraced CORBA for its distributed computing environment because it runs on all the operating systems Home Depot uses: Unix, Windows NT and mainframes.

"With Java, you get the ability to move an application from one platform to another, but by using CORBA as the middleware provider, what you also get is the ability for an application on any platform to communicate with any other application on any other platform," said Tim Sloane, an analyst at Boston-based Aberdeen Group, Inc. "Through the Interface Definition Language, CORBA allowed us to have a Java object call a Cobol object or a Cobol object call a C object," Anderson said. "[So] we could leverage off of legacy code."

Not surprisingly, building applications using the still-developing Java hasn't been without obstacles. With its Employment Application Kiosk program, Home Depot programmers had to write their own transaction initiator in CICS on the mainframe and develop their own drivers for touch-screen and electronic-signature capture because there was none available, Anderson said.

Home Depot developers also had to tinker with applications to improve performance because they don't run at the same speed on Microsoft Corp.'s Windows NT, Hewlett-Packard Co.'s Unix or IBM's OS/390 and AIX.

"Different implementations of the Java virtual machine [that compiles the Java code] is where the problem lies," Anderson said. "We were having substantial ... different response times across different operating systems. It makes us have to rearchitect a little bit in order to get the performance the way we need it to be."

On the whole, Java's benefits outweigh the risks. Developers can concentrate on the business logic, and their Java applications can be distributed easier via a central server, he said. □

Corporate data being pushed to desktop

CONTINUED FROM PAGE 49

explore data in corporate systems.

Adaptec Corp., the maker of I/O boards and other related products, is testing EventConsole and ContentBroker.

The company has created channels for information related to sales, competitive business information and technology trends, according to Douglas Phan, director of information technology and architecture.

"We picked applications we felt would give us a competitive edge and a rapid return on investment," Phan said.

PERSONAL CHOICE

The idea is to let employees subscribe to information they want, whether it is about pricing changes on Adaptec products, information about the I/O marketplace or technology trends about Microsoft Corp. products, for example.

"People have the ability to control the information they want to get," Phan said. So far, the pilot projects are proceeding without any major glitches, he said, and his company remains happy with its choice.

Tibco's new products are called TIB/EventConsole, which notify users according to preset boundaries, and TIB/ContentBroker, which collects information from software packages, including those from The Baan Co., Clarify, Inc., PeopleSoft, Inc. and SAP AG.

Tibco also is working on providing links to other software packages, including Oracle Corp. applications, Hickman said.

A component called the Channel Manager lets a webmaster or other technically savvy person add or create channels for users' desktops.

Channels are the onscreen windows for specific categories of pushed information.

Pricing starts at $75 per client and $25,000 per server.

Tibco's additions compete with some products already on the market from BackWeb Technologies and Wall Data, Inc., said Maureen Fleming, an analyst at Gartner Group, Inc. in Stamford, Conn.

"Generally, enterprises are looking to gain access to internal systems. This is an emerging area" that accounts for less than $10 million in revenue so far, she said.

The overall trend fits into what Gartner calls the "zero-latency enterprise," Fleming said. That's when a company adopts a "series of strategies to reduce the time it takes to capture information and make it available and actionable," she said. □

Snapshot

Online stock trading market share, second quarter 1998

Charles Schwab & Co.	29.7%
ETrade	11.5%
Fidelity Investments	9.2%
Waterhouse	9.2%
Datek	8.5%
Ameritrade	6.9%
DLJ Direct	4.3%
Quick & Reilly	4.2%
Discover	3.8%
Others	12.7%

Base: Total daily average of 222,000 trades

Source: Credit Suisse First Boston, San Francisco

NEW PRODUCT

ADOBE SYSTEMS, INC. has announced PageMill 3.0 for Macintosh, software for World Wide Web page authoring, site management and Web graphics editing.

According to the San Jose, Calif., company, new features include multimedia drag-and-drop capabilities as well as enhanced support for frames, fonts, and colors.

It ships with thousands of Web templates, graphics and animations and also can check for errors such as broken Web links and spelling errors.

PageMill 3.0 for Macintosh costs $99.

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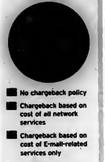

Base: IS professionals at more than 50 large companies

Source: Ferris Research, Inc., San Francisco

NT encryption

SafetyNet, Inc. has announced that it has shipped an encryption tool designed to protect data on PCs that run Windows NT. Though Windows NT's file system provides security, it can be bypassed if the computer is booted from a DOS diskette or if its hard drive is added to another computer.

New Cisco switch

Cisco Systems, Inc. in San Jose, Calif., has announced the Catalyst 5509, a nine-slot Layer 3 switch that can be equipped to support 38 ports of Gigabit Ethernet and a network analysis module. It can run the LAN and Asynchronous Transfer Mode modules used with other models of the Catalyst 5500 switch line.

GOING VIRTUAL

By 2001, there will be:

17.6	million people using virtual private networks (VPN) for remote access
1.4	million sites connected to VPNs
1.3	million extranet partners using the networks worldwide

Source: Infonetics Research, Inc., San Jose, Calif.

More viruses come in the mail

▸ *Infection rates rise, but so do defenses*

By Laura DiDio

WATCH OUT for malicious code hiding in your E-mail.

The number of viruses that infect systems and networks via E-mail has jumped dramatically in the past two years. Conversely, the more traditional sources of viral infections — such as diskettes, computer games and shareware — are on the decline, according to the International Computer Security Association, Inc.'s (ICSA) just-released 1998 Virus Prevalence Survey.

The ICSA survey of 300 large and midsize businesses — which encompassed 581,000 PCs — showed that the overall number of viral infections was up 48% from last year. This year's ICSA study showed that users experienced 86.5 virus infections per 1,000 PCs, compared with 62.5 viral infections in last year's survey.

FOREWARNED, FOREARMED

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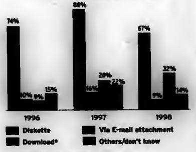
Viruses, page 55

Sources of virus infection, 1996-98



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Source: 1998 Virus Prevalence Survey, International Computer Security Association, Inc., Carlisle, Pa.

Users doubt copier/E-mail combo

▸ *Xerox pushes 'copier portal' to online world*

By Roberta Fusaro

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Copiers, page 54

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First, you install server-based

ManageWise, page 54

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Net adapter cards add reliability

By Bob Wallace

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Products from major players and newcomers alike use a fail-over capability to quickly redirect traffic from an inoperative adapter to a live one. They also balance traffic over multiple cards to increase overall server performance.

With the adapter cards and software, which cost about $1,000 per server, information systems managers can ensure that the failure of a $100 adapter card doesn't cripple a server that costs tens of thousands of dollars.

"What drove me to implement was that we had a couple of adapter cards go bad in

Adapter cards, page 54

Starr report

CONTINUED FROM PAGE 49

objects were trimmed in two.

CBS switched from dynamic HTML to "flat" HTML, reducing system load by eliminating direct calls to an Oracle database, and attempted to reconfigure some systems on the fly.

QUERY BACKUP

Yet another potential bottleneck comes from database queries, either within the same organization or from a server via the Internet.

"If you're linking to other sites, make sure you buffer that," said John Nicol, technical director at MSNBC, a joint venture between National Broadcasting Corp. and Microsoft Corp. "You don't want your site to go down because your queries to another site are backed up."

Instead, a separate server could be performing those queries, while the Web server then gets the latest available results. Another option: Older information can be cached until updates are available.

For the U.S. government sites used as "official" posting areas for the Starr report, "there's not a lot you can do when you've only got a day's notice or so," said Herbert Becker, director of information technology services at the Library of Congress.

Becker decided to use a separate, more powerful server to handle the Starr report.

Nevertheless, a system that typically deals with 9 million transactions per month was somewhat overwhelmed by 3.9 million in one day, with many connection attempts failing on the Friday afternoon that the report was released.

The Internet Traffic Report, published by Andover.Net in Acton, Mass., estimated that packet loss at the site topped 80% during the worst periods of the Internet crush. ☐

STARR GAZING

Average performance and failure rates for certain Web sites after the release of Ken Starr's report to Congress, from 7 p.m. EDT Friday to 6 p.m. EDT Saturday:

Site	Average performance	Failure rate*
House of Representatives	11.85 seconds	48%
MSNBC	2.27 seconds	4%
CNN	5.75 seconds	12%
The New York Times	4.55 seconds	4%
The Wall Street Journal	3.80 seconds	1%
USA Today	9.51 seconds	1%

** Percentage of attempts that resulted in not being able to access or in partial access*

Source: Keynote Systems, Inc. (www.keynote.com), San Mateo, Calif.

Home Depot, Java

CONTINUED FROM PAGE 49

operate with applications written in other languages and let all of its programmers develop in the same language and leverage off the same infrastructure. Despite some early hurdles, Home Depot is finding that Java is working as planned. The company has at least three key Java applications running:

- A Virtual District Office that allows district managers to view store-performance reports, which are presented in Hypertext Markup Language through World Wide Web browsers.
- A customer service form that lets the company rent out trucks to customers using a graphically oriented Java application to fill out the contract. Novera Software, Inc.'s JBusiness application server sits in the middle tier.
- An Employment Application Kiosk that lets a prospective employee watch a video, take a test and fill out an employment form through a Java application. Managers can access resumes and even activate employees through the Java application.

Home Depot programmers break up the code into a thin presentation layer on the client, putting business logic in the middle tier and data access objects on the back end, Anderson said.

Although other companies have been hesitant to take the plunge, Home Depot embraced CORBA for its distributed computing environment because it runs on all the operating systems Home Depot uses: Unix, Windows NT and mainframes.

"With Java, you get the ability to move an application from one platform to another, but by using CORBA as the middleware provider, what you also get is the ability for an application on any platform to communicate with any other application on any other platform," said Tim Sloane, an analyst at Boston-based Aberdeen Group, Inc. "Through the Interface Definition Language, CORBA allowed us to have a Java object call a Cobol object or a Cobol object call a C object," Anderson said. "[So] we could leverage off of legacy code."

Not surprisingly, building applications using the still-developing Java hasn't been without obstacles. With its Employment Application Kiosk program, Home Depot programmers had to write their own transaction initiator in CICS on the mainframe and develop their own drivers for touch-screen and electronic-signature capture because there was none available, Anderson said.

Home Depot developers also had to tinker with applications to improve performance because they don't run at the same speed on Microsoft Corp.'s Windows NT, Hewlett-Packard Co.'s Unix or IBM's OS/390 and AIX.

"Different implementations of the Java virtual machine [that compiles the Java code] is where the problem lies," Anderson said. "We were having substantial . . . different response times across different operating systems. It makes us have to rearchitect a little bit in order to get the performance the way we need it to be."

On the whole, Java's benefits outweigh the risks. Developers can concentrate on the business logic, and their Java applications can be distributed easier via a central server, he said. ☐

Corporate data being pushed to desktop

CONTINUED FROM PAGE 49

explore data in corporate systems.

Adaptec Corp., the maker of I/O boards and other related products, is testing EventConsole and ContentBroker.

The company has created channels for information related to sales, competitive business informatinn and technology trends, according to Douglas Phan, director of information technology and architecture.

"We picked applications we felt would give us a competitive edge and a rapid return on investment," Phan said.

PERSONAL CHOICE

The idea is to let employees subscribe to information they want, whether it is about pricing changes on Adaptec products, information about the I/O marketplace or technology trends about Microsoft Corp. products, for example.

"People have the ability to control the information they want to get," Phan said. So far, the pilot projects are proceeding without any major glitches, he said, and his company remains happy with its choice.

Tibco's new products are called TIB/EventConsole which notify users according to preset boundaries, and TIB/ContentBroker, which collects information from software packages, including those from The Baan Co., Clarify, Inc., PeopleSoft, Inc. and SAP AG.

Tibco also is working on providing links to other software packages, including Oracle Corp. applications, Hickman said.

A component called the Channel Manager lets a webmaster or other technically savvy person add or create channels for users' desktops.

Channels are the onscreen windows for specific categories of pushed information.

Pricing starts at $75 per client and $25,000 per server.

Tibco's additions compete with some products already on the market from BackWeb Technologies and Wall Data, Inc., said Maureen Fleming, an analyst at Gartner Group, Inc. in Stamford, Conn.

"Generally, enterprises are looking to gain access to internal systems. This is an emerging area" that accounts for less than $10 million in revenue so far, she said.

The overall trend fits into what Gartner calls the "zero-latency enterprise," Fleming said. That's when a company adopts a "series of strategies to reduce the time it takes to capture information and make it available and actionable," she said. ☐

Snapshot

Online stock trading market share, second quarter 1998

Charles Schwab & Co.	29.7%
ETrade	11.5%
Fidelity Investments	9.2%
Waterhouse	9.2%
Datek	8.5%
Ameritrade	6.9%
DLJ Direct	4.3%
Quick & Reilly	4.2%
Discover	3.8%
Others	12.7%

Base: Total daily average of 222,000 trades

Source: Credit Suisse First Boston, San Francisco

NEW PRODUCT

ADOBE SYSTEMS, INC. has announced PageMill 3.0 for Macintosh, software for World Wide Web page authoring, site management and Web graphics editing.

According to the San Jose, Calif., company, new features include multimedia drag-and-drop capabilities as well as enhanced support for frames, fonts, and colors.

It ships with thousands of Web templates, graphics and animations and also can check for errors such as broken Web links and spelling errors.

PageMill 3.0 for Macintosh costs $99.

Adobe Systems
(408) 536-6000
www.adobe.com

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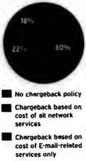
Briefs

Chargeback policies for E-mail



Base: IS professionals at more than 50 large companies

Source: Ferris Research, Inc., San Francisco

NT encryption

SafetyNet, Inc. has announced that it has shipped an encryption tool designed to protect data on PCs that run Windows NT. Though Windows NT's file system provides security, it can be bypassed if the computer is booted from a DOS diskette or if its hard drive is added to another computer.

New Cisco switch

Cisco Systems, Inc. in San Jose, Calif., has announced the Catalyst 5509, a nine-slot Layer 3 switch that can be equipped to support 38 ports of Gigabit Ethernet and a network analysis module. It can run the LAN and Asynchronous Transfer Mode modules used with other models of the Catalyst 5500 switch line.

GOING VIRTUAL

By 2001, there will be:

17.6	million people using virtual private networks (VPN) for remote access
1.4	million sites connected to VPNs
1.3	million extranet partners using the networks worldwide

Source: Infonetics Research, Inc., San Jose, Calif.

More viruses come in the mail

▸ *Infection rates rise, but so do defenses*

By Laura DiDio

WATCH OUT for malicious code hiding in your E-mail.

The number of viruses that infect systems and networks via E-mail has jumped dramatically in the past two years. Conversely, the more traditional sources of viral infections — such as diskettes, computer games and shareware — are on the decline, according to the International Computer Security Association, Inc.'s (ICSA) just-released 1998 Virus Prevalence Survey.

The ICSA survey of 300 large and midsize businesses — which encompassed 581,000 PCs — showed that the overall number of viral infections was up 48% from last year. This year's ICSA study showed that users experienced 86.5 virus infections per 1,000 PCs, compared with 62.5 viral infections in last year's survey

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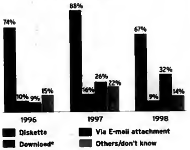

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Adapter cards, page 54

.WORK THE
WEB.

[illegible]

THe IT DiRECtOR is having heart palpitations in the elevator.

He hates giving speeches. In less than an hour he'll be in front of the entire IT department of the company. Rehearsing his speech in his head, he reminds himself not to forget to mention how successful the implementation of the new [1](employee self-service HR application) has been. The CEO will be there, so he also wants to point out that the [2](server consolidation program) and Y2K project are finished and, most importantly, within budget. The elevator doors open. His [3](pager) vibrates. It's an e-mail from his wife. She asks him to remember to pick up a tin of smoked eel on the way home. He bumps into the lead Webmaster in the hall who tells him that they've been able to take on new projects since they have dramatically [4](reduced the backlog) on Website change requests. He makes a mental note to say something in his speech about how well the Web team is doing. He looks down and sees, to his horror, that he's wearing two different color socks.

THE [5](BEST PARTS) OF HIS DAY WERE MADE POSSIBLE BY LOTUS.

[1] Lotus Notes® HR applications using PeopleSoft.® [2] Lotus Domino™ server performance and scalability. [3] Lotus Pager Gateway with Wireless Access. [4] Lotus Domino developer tools. [5] www.lotus.com/worktheweb

Lotus

An IBM Company

[illegible]

Adapter cards add reliability

CONTINUED FROM PAGE 51

servers and didn't want that to happen again," said Steve Marshall, systems engineer at Imperial Credit Industries, Inc. in Torrance, Calif. The company is considering upgrading to two $45,000 servers and believes that paying less than $1,000 each for protection is a wise investment.

"It's not an intelligent choice not to do it. It's not worth taking the risk," Marshall said.

Server load-balancing products

What they are:

Adapter cards and related software that enable users to balance traffic over multiple network interface cards in their servers

Benefits:

- **Eliminate a single point of failure by providing redundancy**
- **Eliminate bandwidth bottlenecks to improve throughput**

Some of the major players:

Compaq, Intel, IP Metrix, NSI Software, Sun Microsystems

DOWNTIME COSTLY

Imperial runs its general ledger applications on two $40,000 Compaq Computer Corp. servers that are accessed internally and over a wide-area network by four of its subsidiaries, Marshall said.

"I have to make sure that the servers are available from 7 a.m. to 7 p.m. Losing them for any [substantial] amount of time could be detrimental to the company," he said.

Vendors began shipping the new breed of adapter cards and software around the beginning of this year, with Intel Corp., Sun Microsystems, Inc. and Compaq among the players, said David Paul Lightner, an analyst at Dataquest in San Jose, Calif.

"Everyone will have a version by the end of the year," he predicted.

Two more companies — IP Metrix and NSI Software, Inc. — early this year started shipping server software that works with any adapter card, Lightner added.

The New York Mayor's Office went with the software primarily to eliminate a single point of failure in its NT servers, which cost from $20,000 to $40,000 apiece. It also was pleased to experience a big performance boost from load balancing.

PERFORMANCE BOOST

"We needed fail-over software for our servers so that if one adapter blows up, traffic is shifted to the next one," said Ping Choi, LAN administrator at the mayor's office. Adding a second adapter card and IP Metrix's load-balancing software boosted performance by 30% to 40%, he said.

Most users buy the advanced adapter cards or software for redundancy, Lightner said. "Failover functionality is most important because it's a safety net. Load balancing helps performance but is an added value," he said.

Nonetheless, Bradley Carroll, systems programmer-LAN at food wholesaler RichFood Holdings, Inc. in Richmond, Va., is looking to the products to help provide bigger pipes to his company's NT servers.

"We need bandwidth relief because our print servers are getting beaten up with all the jobs coming in," he said.

RichFood Holdings now uses one 16M bit/sec. Token Ring adapter per server and plans to go with two that support 32M bit/sec. each per server to solve the congestion problem, Carroll said. □

Users doubt copier/E-mail combo

CONTINUED FROM PAGE 51

products with proprietary mail packages such as Lotus Notes and Microsoft Corp.'s Exchange, according to Kevin Kmetz, a research manager at Framingham, Mass.-based International Data Corp. (IDC).

The result will be more choices for users, he said. IDC is a sister company to *Computerworld*.

DIGITAL ADVANTAGE

Xerox is seeking to take advantage of advancing digital technology in the printer market by offering users a "copier portal" from which they can access and manage both print and electronic documents.

IBM, meanwhile, is trying to find another marketing avenue for Notes, selling it to Xerox users to help compete with Exchange, which is increasing in market share, said analyst Barry Tepper at Norwell, Mass.-based Cap Ventures, Inc.

What could be more telling long term, according to analysts, is that some time next year both vendors will support the Salutation Architecture, an open standard that lets multifunction devices, scanners, printers and fax machines communicate.

The protocol is widely used in Europe but has been slow to catch on in the U.S.

Salutation would be particularly valuable to remote employees who need to print, fax and access documents on the road, analysts said.

Charles Jeffers, information technology manager at the Atlanta Convention & Visitors Bureau in Atlanta, uses Xerox's Document Centre 265ST printer to create proposals.

But Jeffers said his organization uses mostly Microsoft products, including Exchange, so he would prefer that the Xerox integration be with Office software.

Rich Bethart, president of Bethart Printing Services in Hamilton, Ohio, said his company recently added a Document Centre 265ST printer to its stable because digital printers mean quicker turnaround. But he isn't interested in linking it to E-mail.

"We're print for pay. These features sound like they are designed more for my customers," he said. Bethart said his company would consider the hardware/software bundle, but "the software capabilities would have to be decent because the machines aren't cheap." □

ManageWise review

CONTINUED FROM PAGE 51

components on a NetWare server running IntranetWare 4.1 (in my case running on a Dell Optiplex Go+). The installation adds several NetWare Loadable Modules (NLM) to the system in a process that most NetWare administrators can do in their sleep. Support for NetWare 5.0, to be released later this year, is also included in ManageWise 2.6.

Next, you load the software for the management console onto a workstation running either Windows 95 or 98 or Windows NT Workstation 3.51 or 4.0. I loaded the console applications onto a Hewlett-Packard Kayak workstation, running Windows NT Workstation 4.0.

After installation, the first difficulty cropped up. As with several other products in Novell's line, you must follow a lengthy list of configuration steps to put ManageWise 2.6 into service. I would have preferred an interactive process rather than having to follow instructions.

Once I completed the fairly complex setup, a set of NLMs called NetExplorer immediately began gathering information about the test network based on the contents of TCP/IP traffic. The ManageWise Console software, which runs on the NT workstation, used this information to build a graphical image of the network, to which I could quickly add detailed information such as physical location of the equipment, primary user and contacts names.

Every system communicating on the local Ethernet network segment appeared in the diagram, although the NLMs gathered almost no system details beyond the IP address before the next step of the installation, loading the client software.

As I began logging users in to the NetWare server, the ManageWise system began automatically loading the SNMP agent software onto each workstation. This software then gathered detailed information about the workstation and transmitted it to the inventory database. The detailed information was extremely complete, down to the level of variables set in the workstation's operating system.

One flaw I found in this process was that the database entries for each system were recorded under the name of the logged-on user rather than the host or system name assigned to the workstation itself. That is a serious limitation when dealing with roving users or shared workstations. There was no obvious way to address it.

ManageWise loads utilities at each workstation, letting the administrator both monitor and control actions on the workstation. Though this is undoubtedly useful in many, if not most, network environments, I found serious flaws in how Novell has implemented these features.

One notable problem is that the remote control agent, as installed by default, lets an administrator lock on to and either view or control a workstation with only a tiny, almost unnoticeable indicator at the bottom of the user's screen. During my testing, an administrator drove another user nearly to distraction by causing applications to misbehave.

LOST DATA

However, even more troubling was the feature letting an administrator reboot a remote workstation. Clearly useful in many situations, this tool not only gave no notice to the workstation user, but it also rebooted the station without properly closing applications first, I was astonished to find.

An application that holds changes in memory simply loses unsaved data. That was true even though an application would normally have recovered that same data had the workstation simply crashed.

Because of this, administrators will need to be even more careful to control access to key systems in their environments as well as take appropriate steps to alter default settings for some segments and user groups.

Being able to easily snoop into or disrupt systems in areas such as accounting or the executive wing isn't likely to be appreciated as a leap forward in network management.

ManageWise 2.6 contains several useful refinements that will certainly make it worth adopting in organizations with many NetWare systems in place. Smaller organizations — those with only one or two servers and a few workstations — will find the product overkill. □

Hayes is systems control manager at Client/Server Labs, Inc. in Atlanta, a primary test partner of Computerworld. *He can be reached at ghayes@cslinc.com.*

More viruses come in the mail

CONTINUED FROM PAGE 51

uct development manager at ICSA headquarters in Carlisle, Pa. "That's good news, because the virus code itself is becoming more malicious. The upside is that the antivirus vendor community is responding much more quickly. Once a virus hits the streets, a fix is usually posted within a couple of days."

Users responding to the latest ICSA survey also indicated that the rate of viral penetrations — most frequently macro viruses — via E-mail now account for 32% of all new infections, Bridwell said.

Also, the newest viruses contain more malicious code with the potential to do more damage to systems, he said.

Diskettes remain the most common source of infection — 68% of the survey's users traced their viruses to diskettes — but E-mail is gaining rapidly. In the 1996 ICSA Virus Prevalence Survey, only 9% of viruses were transmitted via E-mail; that figure tripled to 27% last year and rose again to 32% in the latest survey.

"We expect this trend to continue because more and more businesses are transferring data via E-mail — and [via] multiple E-mail and groupware packages at that," Bridwell said.

Phillip Carden, a security analyst at The Renaissance Worldwide, Inc., a Hoboken, N.J., consultancy, said the only thing that surprised him about the ICSA's findings was that "the percentage and number of companies that traced E-mail as the source of their viruses wasn't higher than 32%."

Carden added that he believes that, though viruses hiding in E-mail messages will continue to pose a big problem, fewer businesses should be plagued by viruses invading their systems via diskettes.

"There's a popular misconception that any type of contact between the PC and infected diskette can result in downloading the virus, but that's not true," Carden said. "In fact, it's actually getting harder to transmit viruses via diskette because you have to boot the machine while the diskette is installed." □

NEW PRODUCTS

LANART CORP. has announced the FTH1220 and the FTH2420, Ethernet hubs with 12 and 24 ports.

According to the Needham, Mass., company, the hubs have an internal 10/100 switch designed to help Ethernet-based networks transition from 10M bit/sec. to 100M bit/sec. speeds.

The FTH1220 costs $995, and the FTH2420 costs $1,595.

LANart
(781) 444-1994
www.lanart.com

BOCA RESEARCH, INC. has announced the WT120, an Ethernet-based Windows terminal.

According to the Boca Raton, Fla., company, the thin client provides users with office networking, Internet access and printing capabilities. It is based on Citrix Systems, Inc.'s Independent Computing Architecture. It costs $499.

Boca Research
(561) 241-8088
www.bocaresearch.com

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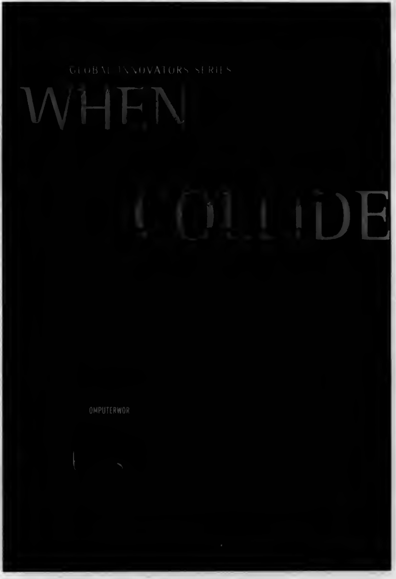

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Briefs

Oracle sales tools

Oracle Corp. in Redwood Shores, Calif., has announced a mobile version of its Oracle Sales and Marketing application that lets salespeople access information on a handheld organizer using the PalmPilot platform. Future releases will support other handheld devices such as those using the Windows CE platform, Oracle said. Pricing wasn't disclosed. Oracle also has announced an online service for salespeople and new features for Oracle Internet Commerce Server 2.0 and Oracle Web Customer 3.0. The service, Oracle Field Sales Online, was designed to let salespeople use a browser to access sales information, Oracle officials said.

Collaboration software

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Knowledge management update

Is knowledge management really important?

Base: 500 executives and IS professionals

Source: The Delphi Group, Inc., Boston

Analysis may help retailer end slump

Service Merchandise's Danny Schunk: "We hung in there by a thread" during the store's years-long downturn

▸ *Service Merchandise uses OLAP tools to target customers, markets and regain footing*

By Stewart Deck

IN THE 1970s, the catalog showroom retail concept was hot. Customers could look at dozens of product models and compare them. But in the late '80s, when discount stores began to offer lower prices by stocking only a few models, catalog showrooms went bust.

And companies such as Service Merchandise Co. didn't know enough about their customers' buying habits or how to precisely target marketing campaigns to help them react quickly enough to change the downward slide.

The trouble was the store's retail concept and a lack of detailed customer purchasing and marketing data.

HANGING ON

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At the crux of the trouble were the chain's retail concept and a lack of detailed customer purchasing and marketing data.

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Because Service Merchandise already has compiled a 500G-byte data warehouse in an Informix Corp.-based system, it now is attempting to analyze its way out of trouble, using tools from Intrepid Systems,

Retailer, page 58

Integrating with R/3 can be hard on users

By Craig Stedman

FOR SAP R/3 users, the devil is often in the integration.

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SAP issues, page 58

HARD CONNECTIONS

Users tying applications to R/3 face these hurdles:

- Setting up two-way data feeds
- Translating different data models
- Ensuring that data stays in sync

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Visual Basic almost a 'vision'

By Howard Millman

DEVELOPERS FOCUSED on building Internet, intranet and distributed applications will like what they find in Microsoft Corp.'s Visual Basic 6.0.

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Visual Basic, page 58

PRODUCT REVIEW

▸ *Visual Basic 6.0*

OVERALL B+ GRADE

MICROSOFT CORP.
Redmond, Wash.
(800) 426-9400
www.microsoft.com

Price: $1,299 (Enterprise Edition), $549 (Professional Edition), $109 (Learning Edition)

Pros: Extensive connectivity to back-end Windows 95, 98 and NT 4.0 and Unix and legacy databases; native compiler and run-time optimization technologies improve compile and execution performance

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Briefs

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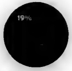

■ Important for business

■ Merely a marketing ploy or just the latest fad

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Vendors back R/3

▸ *Announce services to aid implementation*

By Michael Goldberg
LOS ANGELES

EVERYONE, IT SEEMS, has hopped on the product and service bandwagon to help businesses implement SAP AG's business process software.

The players making announcements at Sapphire '98 here last week included traditional systems integrators, such as the big accounting and consulting firms and vendors, for instance, PC market power Dell Computer Corp.

Dell announced it would open an SAP R/3 center of expertise next month in Austin, Texas, and install R/3 enterprise resource planning software on its Windows NT-based PowerEdge servers so users could buy the servers already configured.

Among the announcements were the following:

- Federal Express Corp. was slated to demonstrate the first in a planned series of products linked to R/3. FedEx Express Bridge links the company's shipping and package tracking capabilities with R/3.
- The consulting subsidiary of KPMG Peat Marwick LLP announced an alliance to cooperate on marketing, sales, training and implementation efforts for R/3-related accounting projects related to joint business ventures.
- IntelliCorp. Inc., a maker of modeling products for packaged applications, unveiled LiveInterface 7.2, a new version of its software that lets users share R/3 data with other applications. Earlier this year, IntelliCorp acquired the product, previously called UPI, from Deloitte & Touche LLP.
- And Siemens/Nixdorf Information Systems, Inc. said it is going to enter into the R/3 outsourcing business. Company officials said the U.S.-based unit of the German conglomerate would sell its own experience as an R/3 user as a service provider.

The company plans to introduce maintenance contracts that could allow customers to pay for service needed — five days per month, for example. □

Visual Basic

CONTINUED FROM PAGE 57

developers to buy add-ins if they want the platform and data-source independence of Common Object Request Broker Architecture (CORBA) component technology.

Working with a late beta of the Enterprise version, I built a couple of trial applications, including a more complex one that linked to an Oracle Corp. database, in less than an hour. (The final version is now shipping, but I was unable to test it by press time.) The Enterprise Edition differs from the Professional Edition by including team development, distributed computing features and Visual Component Manager, an integrated component repository.

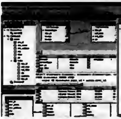
Microsoft, continuing its embrace of all things Internet, includes two new tools to aid in building Web-based applications using the Internet Information Server (IIS) and dynamic Hypertext Markup Language (HTML) technologies. Those new features give developers increased control of performance and scalability. Version 6.0 requires Windows 95, 98 or NT 4.0 with Service Pack 3 or later.

For example, IIS applications do most of their processing on the server. As a result, IIS projects should work with any browser. By separating out the presentation layer, developers can better control business logic, enhance runtime performance and, possibly, reduce coding time. Finally, IIS projects produce Web-class objects, which resist reverse engineering and code modification.

Dynamic HTML applications execute most of their code on the client system, which provides more opportunity for rich presentations, including multimedia elements. One caution: Dynamic HTML's custom tags are supported only by Microsoft's own Internet Explorer, so that project type is best used on intranets where you have full control of the client's browser.

DATABASE ACCESS

Version 6.0 includes ActiveX Data Objects, a more mature version of the Remote Data Objects introduced in Version 5.0. The ActiveX Data Objects accelerate connections to structured and unstructured database records and even nonrelational sources. For example, you can access Oracle7 and Oracle8 databases running on NT, Unix and MVS, overcoming one of Version 5.0's limitations.


Version 6.0 still forces developers to buy third-party add-ins for CORBA

Version 6.0 Enterprise also includes OLE DB drivers for Microsoft's SQL Server 6.5 and later, Oracle7.3 and later, Microsoft Access, Open Database Connectivity data sources and Microsoft's SNA Server. But keep in mind that OLE DB drivers generally run slower than native drivers. Development groups that want a wider range of connectivity options should consider Microsoft's Visual Studio, a collection of traditional client/server, Web-oriented and Java development and deployment tools. It includes Visual Basic 6.0.

Microsoft made only minor changes under the hood. Compiled applications require Version 6.0's runtime library and appear to execute faster, thanks to a new optimize-at-runtime feature. But the largest gain in efficiency and convenience accrues to developers of Web-based projects. For them, this upgrade makes good sense. □

Millman operates Data System Service Group LLC, a consultancy in Croton, N.Y. His E-mail address is hmillman@ibm.net.

SAP issues

CONTINUED FROM PAGE 57

on the other side of the link is upgraded.

But Church & Dwight didn't get off so easy with two third-party applications that had to be tied to R/3. For one of them — a package that tracks discounts given to retailers for in-store promotions — an automated R/3 interface was still just a gleam in the eye of the software developer, Panesis said.

An interface to R/3 was available for the other application, Manugistics, Inc.'s supply-chain planning software, which Church & Dwight already was using. But Panesis said the Manugistics interface was designed to continually shuttle data on a real-time basis, which didn't mesh well with the company's batch transfer needs. That resulted in data integrity problems at the Manugistics end of the line, he said.

Church & Dwight "literally spent months" trying to get the interface to work, Panesis said. Finally, it assigned an on-site consultant to write a custom link, which took another eight weeks to develop.

During the past two years, SAP has released hundreds of application programming interfaces that are supposed to shield R/3 users from having to write ABAP code. That number will increase to almost 1,000 when R/3 4.5 becomes generally available next year, SAP executives said.

But even the programming interfaces don't fully hide the complexity of tying other applications to R/3, said David Dobrin, an analyst at Benchmarking Partners, Inc. in Cambridge, Mass. Users "often minimize the difficulty," he said. "But they're going to spend a lot of time on this. People do it for a living."

GATX Capital Corp. looked integration in the eye and decided to just stay away from it as much as possible, said Michael Cromar, chief financial officer at the San Francisco-based asset management firm. Instead of tying in other applications, GATX is doing almost all of its business processing inside R/3.

"We replaced about 25 systems with SAP, and the goal was to simplify our life," Cromar said. "We like the idea of having all our data in one place so we don't have to synchronize it between different systems." The only interface work done by GATX involved hooking some Excel and Notes applications that track leases to R/3, which Cromar described as relatively painless.

ABAP itself wasn't the issue: GATX wrote more than 4,000 printed pages of ABAP code to modify R/3 for equipment leasing uses, and Cromar said the SAP language wasn't too ornery. What GATX didn't like was the idea of having to maintain multiple application environments outside of R/3, he said. □

Retailer

CONTINUED FROM PAGE 57

Inc. in Alameda, Calif.

The retailer uses Intrepid's DecisionMaster, a $200,000 relational online analytical processing tool, to create custom reports that find patterns in sales and inventory by region, store and individual items.

The company now can track marketing campaigns such as the coupon-flier carried in recent Sunday newspapers that asks buyers to "discover the new Service Merchandise."

The company had inserts circulated in 70% of its markets and will analyze each market response. "Now we can dig into the data about the markets that didn't respond to the coupons and highlight where it didn't work. We can then adjust our campaigns, redesign our fliers or get out of newspaper inserts in that market," Schunk said. He added that if more stores need to be closed, that type of tool would help the chain to determine which specific stores underperform, rather than closing all the stores in a region.

TREND CATCHING

Mitch Kramer, an analyst at Patricia Seybold Group in Boston, said consolidating customer information also lets retailers run predictive modeling. "They can use that information to manage marketing campaigns, change products or change the way they treat you as a customer," Kramer said.

"When we recognize trends we can act much faster," said Michael Presley, Service Merchandise's director of buying and inventory management. "Before we had this in place, we had to do it all by ad hoc [database] requests, which were limited and slow." Presley now can transfer chunks of data to his own spreadsheets and manipulate it as much as he wants.

Whole new analytic worlds have opened for Presley with the ability to look at data for individual stores, items, product classes and supply vendors.

"I have more data now than I ever imagined," Presley said. □

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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Eight-way servers

Amdahl Corp. and Fujitsu Ltd. have demonstrated an eight-way server based on Intel Corp.'s Xeon processor. The server, which can support up to 16G bytes of memory and 218G bytes of internal storage, uses Fujitsu's Synfinity Interconnect technology to tie two four-way servers into a single shared-memory system that runs Windows NT.

Separately, Data General Corp. in Westboro, Mass., has announced a TeraServer-in-a-Box configuration that can support up to 11 Windows NT servers in a single box. The company also has announced a new version of its Cluster-in-a-Box configuration with two quad-processor Xeon servers that together in a high-availability configuration with supporting management software.

Samsung 15-in. LCDs

Samsung Electronics Co. has announced plans to boost production of its active-matrix, 15-in. LCD screens for notebooks to 20,000 units per month by year's end. Samsung said 13.3-in. displays will become mainstream starting early next year and that more users in the future will opt for 14.1- and 15-in. models. Smaller Taiwan-based laptop makers have already rolled out models featuring the larger screens, but limited supply has kept top-tier vendors from launching models with 15-in. panels.

Higher chip demand

Citing stronger-than-expected demand for all of its products, especially in North America and Europe, Intel Corp. has revised its third-quarter revenue expectations upward. It said it expects its revenue to rise 8% to 10% from the second quarter. In July, Intel cautioned investors that third-quarter revenue would be flat to slightly up from second-quarter revenue. Demand in the Asia-Pacific region, excluding Japan, is meeting Intel's expectations.

• Users struggle with TCO models

Complex costs evade control

By April Jacobs

ALTHOUGH USERS are more than a little interested in stretching their IT dollars, actually reducing costs and accurately measuring them is fairly difficult, research shows. And the greatest unknown in any project — managing risk — can be one of the biggest cost factors.

At least that's what Boston-based Aberdeen Group, Inc. concluded in a recent report that bucked the conventional wisdom emerging over the past two years regarding total cost of ownership (TCO), namely that it can be measured with a fair degree of accuracy [CW, Sept. 14].

Measuring TCO refers to the concept of assessing and being able to predict the complete cost of acquiring and maintaining one's information technology infrastructure. The conventional wisdom has been that companies can reliably identify those costs, which include everything from acquisition of equipment to support, maintenance and service.

The conventional wisdom has been that companies can reliably identify TCO factors.

Analysts said building a model that can accurately reflect costs is almost prohibitively difficult, but it can be done by including the following techniques and tools:

- Identifying risk factors.
- Carefully assessing core technology for risk factors.
- Standardizing hardware and software.
- Automating distribution and upgrades of applications and operating systems.
- Assessing service and maintenance delivery.

For example, at Tulsa, Okla.-based Commercial Financial Services, Inc., Chief Information Officer Chris Horrocks said he doesn't focus on TCO when

TCO, page 62

GIORGIO PALMISANO

Synchronization software has reaped "phenomenal savings" for global shipping line Maersk, says Jeffrey Ivinski, general manager of sales processes

System lets carrier slash dial-up costs

By Matt Hamblen

SYNCHRONIZATION software has enabled global shipping line Maersk, Inc. to cut its dial-up time and costs because sales personnel spend less time online swapping customer data in their laptops with corporate servers in Madison, N.J.

After one year with the new system from Synchrologic, Inc. in Atlanta, Maersk officials said the company's communications costs, including time spent by sales representatives, have dropped from $286,000 per year to less than $14,000 per year. Instead of spending an average of two hours per week online, each of the 225 sales representatives who use laptops can get daily data updates in two to three minutes.

And bandwidth demand on the phone line has been cut by more than 90%, Maersk and Synchrologic officials said.

More important than the

Dial-up costs, page 62

Reliability counts in RAID

By Nancy Dillon

A SOON-TO-BE-RELEASED survey of 250 Fortune 1,500 storage managers reveals that the most important purchase criterion for Windows NT-based RAID arrays is reliability.

Purchase cost is just the eighth most important factor (see chart).

"Sure, reliability is first," said Kim Ross, chief information officer at Nielsen Media Research, a New York-based television ratings company. "It's the key thing you're looking for from RAID."

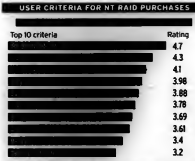
But Ross said that after reliability, he would rate serviceability second and purchase cost third. He said he isn't as concerned with software bells and whistles on his 500G bytes of Windows NT-based RAID.

"There's a lot of difference out there with serviceability," he said. "You've got to look at how easy it is to repair a failed unit, how disruptive disk replacement is to the NT domain. If E-mail has to go down, that's a big deal."

In general, "the research proves that users are really demanding midrange RAID functionality for the commodity-

Reliability, page 62

USER CRITERIA FOR NT RAID PURCHASES



Base: Survey of 250 users at Fortune 1,500 companies in North America, Europe, Asia and Australia

Source: Dataquest, San Jose, Calif.

Carrier slashes dial-up costs

CONTINUED FROM PAGE 61

> Synchronization software is the kind of technology that will separate the big-league lines from the plain-vanilla ones."
>
> – James Winchester, Lazard Freres

time and network savings, sales representatives get daily updates with capacity and pricing data to help them compete for shipping contracts that would fill ocean-going freight liners and swell revenue, said Jeffrey Ivinski, Maersk's general manager of sales processes.

"Before this system, reps spent a lot of time just getting a report ready to send. While this is still a growing system, it's definitely [reaped] phenomenal savings," Ivinski said.

Maersk's upper management was "somewhat skeptical at first when we were talking about a system costing close to $1 million," but with the current level of savings, that amount will be paid off in two more years, he said.

Currently, the shipping industry is regulated so that its sales representatives can't offer lower prices if space suddenly opens in a ship's hold when another customer changes plans and ships fewer goods. But with deregulation of U.S.-regulated lines coming from Congress within a year, "things will change drastically, and this synchronization software will be unbelievably beneficial," Ivinski said.

For example, if a large amount of shipping capacity suddenly opened up on a freighter traveling from Singapore to San Francisco, a Maersk sales representative could reduce the price of the space to beat out a competitor, he said.

EFFECTS OF DEREGULATION

"Deregulation of container shipping will open up a whole new need for this type of real-time global management system for helping set ship capacity and pricing," said James Winchester, an analyst at Lazard Freres & Co. in New York. "It's the kind of technology that will separate the big-league lines from the plain-vanilla ones."

Maersk worked with an integrator to hire Synchrologic to install data synchronization software for about $800,000. The software allows sales representatives to change data in a chart containing a customer's request, but the software manages what is sent and what is returned so that only new information travels over a phone line, analysts said.

The market for the Synchrologic software is "not a large one today but conceptually could be," said Ken Delaney, an analyst at Gartner Group, Inc. in San Jose, Calif. He said Synchrologic customizes the interconnections among mobile users and a variety of databases, something unique among vendors that usually provide software to link with their own databases.

Synchrologic's software works with a homegrown application at Maersk called the Global Account Marketing Plan, Ivinski said. When a sales representative is off-line, the software holds the data on a server, and the data can be quickly distributed to a mobile user once a connection is made.

Though the benefits are great, Ivinsky said it has taken users some getting used to. "The hardest part is that it's such a complicated system," he said. "The salespeople definitely see the benefits [with access to more and current data], but we're trying to simplify things."

Because so much data is available now, Maersk underestimated the size of hard drives that sales managers would need. It thought they would receive only one-fifth of the 35M bytes they download every day from as many as 30 sales personnel each. Maersk currently uses 1G-byte hard drives in 2-year-old laptops and will soon upgrade to new machines with more storage, although the amount hasn't been decided. □

Reliability counts

CONTINUED FROM PAGE 61

oriented NT server environment," said Tom Lahive, an analyst at Dataquest in Westboro, Mass., the research firm that executed the study.

Two high-end storage vendors, known best for their mainframe and midrange products, have weighed in on those user demands in recent weeks.

Storage Technology Corp. in Louisville, Colo., announced that its 9153 RAID array for NT clusters, which was released in March, now lets users add disk capacity, change RAID levels and tune performance while the array is operational.

And Sun Microsystems, Inc. in Mountain View, Calif., announced that the StorEdge A1000 array for workgroups and the StorEdge A3500 array for online transaction processing would gain NT support in November. The StorEdge A5000 Fibre Channel array for data warehousing, as well as Sun's tape libraries, are slated to gain NT support by year's end.

INTRIGUED

The Sun announcement interests Evan Benrubi, a vice president of systems and technology at Transamerica Intellitech, a real estate subsidiary of San Francisco-based Transamerica Corp. That's because he likes his mainframe-attached A7000, Sun's largest array, which already combines NT, Unix and mainframe support.

"An A5000 [at $35,000 to $279,000] is more cost-effective than an A7000 [at $286,000 to $1.9 million], but I wouldn't want to get one without NT support," Benrubi said. "Out in Sacramento [Calif.], we're creating a large NT database, and combining disparate systems under one hardware environment is our ultimate goal."

Sun's NT announcements are "good, but the company needs to solidify its multiplatform initiative, said Anders Lofgren, an analyst at Cambridge, Mass.-based Giga Information Group. "[Sun is] supporting Solaris on everything, and now they've added NT," he said. "But what about the other remaining environments?"

Sun officials said there are no immediate plans to add other Unix platform support to the A1000, A3500 and A5000 arrays. □

Cutting TCO

CONTINUED FROM PAGE 61

implementing projects. He said the company's rapid growth and need to accommodate business needs are more important. But the company doesn't consider extravagance a good thing, either, and wants to make sure that IT is implemented to work optimally.

Commercial Financial Services processes thousands of calls and transactions per day, Horrocks said, and has one of the largest SQL Server databases in the world.

To develop the system without any major hiccups, which would have meant lots of wasted time and resulted in huge labor costs, the company installed a simulation lab to manage its risk up front. It used that lab to test each system and upgrade before it went real-time, Horrocks said.

SEEING CLEARLY NOW

"This has allowed us to get a very clear view of application execution times and configuration capacities — much more clearly than with theoretical numbers. It was a very positive thing to do, and enormous delays have been avoided because of this," he said.

But that isn't the only type of cost.

According to the Aberdeen study, users also need to know their vendors and understand the supply/service relationship so that they know exactly what they are getting in any type of package deal, which might include hardware, software and service.

Taking anything for granted could prove costly and disastrous, a fact not lost on the CIO of a large Southwestern bank, which recently had to begin replacing several thousand PCs after it discovered they weren't year 2000-compliant.

Replacing those PCs, said the CIO, who asked to remain anonymous, is a good example of how unknown factors can turn project costs upside down, making an accurate cost assessment difficult to perfect from the outset.

In research it completed two years ago on TCO, Stamford, Conn.-based Gartner Group, Inc. also stressed that it isn't enough to simply use tools, such as Microsoft Corp.'s Zero Administration for Windows, that were designed to simplify desktop management and reduce TCO. According to Vaughn Frick, an analyst at Gartner, users have to understand how they can use such tools to actually address TCO issues within their companies.

For example, using an asset management tool to track hardware and software isn't very useful unless it is used to develop a standard set of hardware and software to simplify support issues and thus reduce labor costs, Frick said. □

NEW PRODUCTS

EXABYTE CORP. has announced the EZ17, a tape storage autoloader for workgroup servers or remote sites.

According to the Boulder, Colo., company, the autoloader can house one Exabyte Mammoth tape drive and seven Mammoth tape cassettes. Each cassette holds 40G bytes in compressed mode, so the system's total capacity is 280G bytes.

Stand-alone and rack-mount models are available. In addition, the unit can emulate larger Exabyte libraries to facilitate compatibility with third-party backup software.

The EZ17 costs $5,699.

Exabyte
[illegible]
www.exabyte.com

INTERGRAPH CORP. has announced the InterServe 80 SL, a workgroup server, and the 800 SL, a department server.

According to the Huntsville, Ala., company, the Ultra Wide SCSI systems can be configured with single or double 350- or 400-MHz Pentium II processors.

The 80 SL has 64M bytes of memory and 72G bytes of disk storage. The 800 SL offers 64M bytes of memory and up to 144G bytes of internal RAID storage.

Each server has a graphics accelerator and support for PCI 10/100 BaseT networking.

The 80 SL price starts at $2,500.

The 800 SL price starts at $5,900.

Intergraph
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Data Warehousing

Briefs

OLAP server integrates

Business Objects SA has made its query and reporting tools work with several popular online analytical processing (OLAP) server databases, including Hyperion Solutions Corp.'s Essbase 5.0, IBM's DB2 OLAP Server 1.0, Informix Corp.'s MetaCube 4.0 and Oracle Corp.'s Express Server 6.1. Prices vary by configuration. The company plans to add integration with Microsoft Corp.'s forthcoming SQL Server 7.0 OLAP Services in the next release of Business Objects, which is scheduled to go into beta testing by year's end.

Sagent adds R/3 link

Sagent Technology, Inc. plans to ship by year's end DirectLink for SAP, which lets users extract SAP AG for input into their data marts for reporting and analysis.

DirectLink uses a graphical meta-data browser to render SAP tables in a more comprehensible form. The automated conversion eliminates the need for writing extraction code. Pricing hasn't been set.

NCR buys retail vendor

NCR Corp. has bought a controlling interest in Stirling Douglas Group, Inc. in an effort to expand its data warehousing offerings for retailers. Stirling Douglas makes the Profit Series software, used to forecast and replenish merchandise for NCR's Teradata database platform and other operating systems.

NCR bought 90% of Stirling Douglas for an undisclosed amount. It will continue to operate as an independent software provider, NCR officials said.

IDCentric goes parallel

Firstlogic, Inc. has released the Merge/Purge Parallel Option for its IDCentric data-cleansing suite. The new option supports as many as 20 processors simultaneously, running on any Unix, Windows 95/98 or Windows NT platform. Pricing was unavailable.

Data mart users try, try again

By Tony Baer

SYSTEM DESIGN

WHEN DOW CHEMICAL CO. completed its multiyear SAP migration in 1995, it discovered the project wasn't really done. So Dow began to build an enterprise reporting system, which today numbers 25 data marts, using Cognos, Inc.'s PowerPlay online analytical processing (OLAP) cubes.

"Once we had global codes and a globally integrated enterprise platform in place, we recognized and planned ahead for analytical reporting," said Mike Costa, global controller for business reporting and analysis at Midland, Mich.-based Dow.

The marts have paid for themselves in less than a year because their self-service reporting let Dow reduce its information technology reporting staff from 40 to five people. Nearly a quarter of the company's desktop users access the marts. But most important, the marts are helping Dow answer competitive questions such as how to best tune its supply chain.

The key to success was treating the marts with the same degree of planning and user-needs analysis as in the enterprise resource planning (ERP) project, Costa said.

But not everybody gets it right the first time. Most organizations usually redo the database and data-model and query-environment architectures because their inexperience with transaction systems often causes them to first use approaches that don't work well in data warehousing.

For example, when Stanford University in Palo Alto, Calif., built its first data mart five years ago for the finance department, it didn't realize that it eventually

Data mart, page 69

ERP, warehouse used in concert

▸ *Burton Snowboards forecasts sales with SAP*

By Lisa Kempster

FOR BURTON SNOWBOARDS in Burlington, Vt. — the nation's largest seller of snowboards — a key element of maintaining profitability depends on managing the extreme seasonality of its business. Any miscalculation of the inventory, material management or placements means the company's margins take a hit.

Burton uses the enterprise resource planning (ERP) system from SAP AG to compare sales against forecasts by country, region and area. Using the insights gained from that knowledge, the company adjusts its production and shipping. The faster Burton executives can spot a problem, the more likely the company can fix it.

But Burton doesn't rely on an ERP system alone. The company included a data warehouse and a management reporting platform based on Oracle Corp.'s Express Server online analytical processing (OLAP) database engine into its planning system to more tightly control its inventory. The company migrates information every night from the SAP system into its data warehouse and then uses Vista/EA, a management reporting tool from Research and Planning, Inc. in Cambridge, Mass., to view the data.

ERP, warehouse unite, page 69

Burton Snowboards' Justin Wheating and Jennifer Mincar need an ERP system that forecasts sales accurately

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COMMENTARY

Beware dirty data

SHAKU ATRE

This is the fourth in a series on how to build a data warehouse. The previous installment appeared in our Aug. 24 issue.

Legacy data is invariably in worse condition than you realize. And I'm not just talking about relatively simple data anomalies caused by things such as typographical errors, spelling variations and changing area codes.

You are likely to run into problems such as incompatible data formats, codes that no one can decipher, data that's embedded in long text fields, overlapping customer records from multiple systems — some with redundant data and others with conflicting or outdated data — and even chunks of mystery data of long-forgotten provenance and uncertain ownership.

Dirty data, page 69

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making sense of availability claims

how one decimal point can mean the difference between success and failure for your business

Introduction by

IDC
INTERNATIONAL DATA CORPORATION

COMPUTERWORLD
Enterprise Publications

by Steve Josselyn
International Data Corp.

highly available systems prove to be investments, not a cost

[illegible] businesses had two main ways to solve their IS availability problems: For one, they could use the best available standard products and hope for the best. With this option, the burden of providing a highly available solution fell on the shoulders of the IS staff, and it was not a very predictable solution. Or they could buy a tightly integrated solution from a vendor such as Tandem. In the late 1980s and early 1990s, Tandem defined fault-tolerant computing, with its tightly integrated NonStop operating system, interconnect technology, and Himalaya and Integrity series of servers. With its high-volume transaction processing systems, Tandem became firmly entrenched in markets that require 100% uptime, including OLTP-intensive environments such as banking, financial services and telecommunications. (Despite attempts by most major systems vendors, only one other company—Stratus—managed to become a viable contender for true fault-tolerant systems. However, the new generation of cluster-based, so-called highly available (HA) system offerings includes cost-effective alternatives such as Windows NT Server.)

The use of more reliable systems to support computing workloads from file/print serving to sophisticated OLTP networks and data warehouse environments is growing. Many businesses must provide 7x24 access to computing resources in support of multinational operations. Just a few years

Cover and interior illustrations by Christopher Bing
Design by Dan Beard Design

ago, establishing an HA system environment to provide users with functions such as e-mail or groupware would have been considered overkill. But today, while e-mail or groupware applications may not have the same priority as OLTP networks or electronic funds transfer systems, the dependence of businesses on these functions is rising dramatically.

In today's business environment, the cost of any outage is substantial. The cost of ownership for tightly integrated, robust systems that protect completely against any computing disruption is often less than the costs associated with an outage for most OLTP-intensive IS environments. Such costs include labor, lost opportunities, loss of goodwill in the marketplace, and the loss of previously satisfied customers to competitors. An example of this last cost occurred ten years ago when AT&T's phone service suffered a major disruption. Companies like MCI used this to lure customers away from AT&T, eroding its then-dominant market position.

The difficulty of providing seamless failover increases with the complexity of a computing environment and applications. Providing what appears to be 100% uptime on a file server used 12 hours a day six days a week is clearly easier than providing the same efficiency for an online reservation system used 24 hours a day seven days a week.

Ranking HA systems

Continuously available systems consist of hardware and software designed to protect against component- and system-level failures. The complexity and cost of these solutions depend on the types of services provided, the number of users, and the users' perception of an acceptable (vs. unacceptable) service outage.

IDC created its Availability Spectrum to sort out the marketing statements coming from vendors. Rather than wadiog through the differing vendor claims of HA, fault tolerance or continuous availability, the Spectrum shows four availability levels with attributes defined by the impact on a priority user and the system protectioo features. IDC uses the term "highly available" to encompass systems from all vendors that claim HA, fault tolerance or continuous availability as part of their marketing strategy for a product.

This approach ranks solutions by the amount of disruption for the priority user versus comparing hardware and software features. Another factor that determines a solution's slot in the spectrum is the degree of operator intervention, i.e., whether the recovery process is partially or fully automated. The test for placing solutions in the spectrum is based on pass/fail functional criteria.

While ranking HA solutions is based on the impact to priority users, there are other important factors.

- Hardware redundancy needs to be included in power supplies, I/O ports, CPUs, disks, network adapters and physical networks. This redundancy eliminates any single point of failure within the hardware platform. If there is a failure in the hardware running a critical application, a duplicate component is available to ensure that the application has the resources to execute.
- Environmental safeguards protect a system from environmental hazards that can disrupt a critical application. Most current systems include some protection from power surges and short power outages, while uninterruptible power supply (UPS) systems can be installed to provide operation during an extended power outage. If the application is very critical, other forms of protection can be applied.

[illegible]	[illegible]	[illegible]
Availability Level 2 (AL 2) 99.9% available	User interrupted, can quickly reestablish session; may have to rerun some transactions from journal file; may experience performance degradation.	User work transferred to backup components; multiple system access to disks.
Availability Level 1 (AL 1)	Work stops; uncontrolled shutdown; data integrity ensured.	Disk mirroring or RAID and log-based or journal file system for identification and recovery of incomplete in-flight transactions.

Source: International Data Corp

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Availability Level	Impact on a Priority User upon Failure of Any Component	System Protection Features
Availability Level 3 (AL 3) 99.99% available	**Users stay online; current transaction may need restarting; may experience performance degradation.**	**Automatic fail-over transfers user session and workload to backup components; multiple system connections to disks.**
Availability Level 2 (AL 2) 99.9% available	User interrupted, can quickly reestablish session; may have to rerun some transactions from journal file; may experience performance degradation.	User work transferred to backup components; multiple system access to disks.
Availability Level 1 (AL 1).	Work stops; uncontrolled shutdown; data integrity ensured.	Disk mirroring or RAID and log-based or journal file system for identification and recovery of incomplete in-flight transactions.

Source: International Data Corp

Many cluster products allow the inclusion of SMP nodes as cluster members, and users get the best of both worlds: low-cost performance increases with enhanced availability.

- In a cluster configuration, multiple systems are coupled to share computing workloads and resources such as applications, communications and/or access to data. In an HA clustered system, a number of systems or nodes operate independently. Each runs its own copy of the operating system and applications with at least two nodes having access to shared data. If one system node fails, another inherits the storage devices, user workload and applications of the failed node. Downtime is the time required by the backup to inherit workload, resources and users of the failed node and restart any failed applications.

HA cluster systems have different availability characteristics than symmetric multiprocessors, or SMPs. If the purpose in adding CPUs is to increase the ability of the systems to do more work, the least costly option is to add another processor in the same backplane (if the platform supports multiprocessors and isn't already at maximum capacity). But this solution does not eliminate single points of failure. If a processor in an SMP fails, the operating system crashes, and during the reboot the failed processor will be configured out. When an SMP crashes, work stops. The additional processor allows the reboot to occur quickly.

If a processor fails in a cluster of the same processing power, the cluster still continues to operate. Today, many cluster products allow the inclusion of SMP nodes as cluster members, and users get the best of both worlds: low-cost performance increases with enhanced availability.

Enabling software

Enabling software includes enhanced or modified operating environments, middleware, messaging software and RDBMSs. In addition to the older, proprietary systems, most of

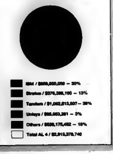
Dynamics of the highly available systems market

The highly available systems market is defined by the AL 2 though AL 4 categories in IDC's availability spectrum. The worldwide market's growth from $11.8 billion in 1995 to $16.6 billion in 1997 represents a compound annual growth rate (CAGR) of just under 19%. By contrast, the 8% CAGR for the overall server market in this same period highlights the increasing demand for highly available solutions. From 1997 to 2002, the projected CAGR in the highly available systems market is 15%, versus 8% for the overall server market.

Demand is being driven by users' growing dependence on all aspects of business supported by an underlying computing resource. The expansion of business transactions generated by electronic commerce coming from the Internet is expected to fuel further growth in highly available systems.

Leaders in the highly available systems market as of year-end 1997 are reflected in the total HA and individual AL 2 through AL 4 figures (see pie charts below).

Factory Revenue Market Share Leaders AL 4: 1997



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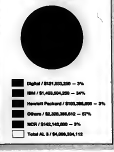
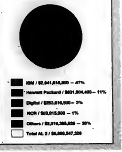


Factory Revenue Market Share Leaders AL 2: 1997



Source: International Data Corp. and Harvard Research Group today's HA systems are Unix-based. Software enabling high availability includes NCR's Lifekeeper FRS, IBM's HACMP, Stratus's ISIS and Digital's TrueCluster as well as TP monitors such as TopEnd, Tuxedo and Encina.

Higher-end AL 4 providers once required the use of proprietary hardware and operating systems or highly specialized versions of Unix—a requirement that kept users of AL 4 systems from taking advantage of off-the-shelf industry-standard software. However, demand from users to run off-the-shelf software on highly available systems is growing.

The promise of running shrink-wrapped software on an HA system platform is driven by the demand created by the announcements of platforms running Windows NT Server. Notable was the partnership among Tandem, Microsoft and Compaq, in late 1995, to deliver an open Windows NT clustering environment providing AL 2 solutions, followed by AL 3 and possibly AL 4 solutions over time. A key component to providing this clustering capability is the Tandem-developed ServerNet interconnect technology. Last year's Coropaq/Tandem merger further solidified the relationship with Microsoft and provided additional focus toward enhancing Windows NT Server clustering capabilities.

The initial release of Windows NT Server, which was designed to provide additional clustering capability (originally code-named Wolfpack), fell short of original expectations. The announcement of NT Server Enterprise Edition provided only two-node failover capability instead of the four-node support that many customers expected. Customers were also disappointed in the product's ability to provide failover for the operating system and underlying hardware platform without the same capability for the major application (Exchange) they were looking for.

The distinction between systems designed for failover versus takeover is determined by implementation. A system designed to failover to another similarly configured environment is usually achieved through software and management practices. Establishing failover scenarios and practices requires intervention by IS personnel and therefore is prone to human error. True fault-tolerant systems are implemented with multiple system components running in lock-step, so that in the event of a failure, the remaining component will seamlessly take over operations with little or no performance degradation.

As the marketplace matures, some of the more cost-effective features now found only on higher-end systems will become requirements or options (e.g. mirroring disk software, RAID arrays and dual I/O ports). Users purchasing servers today should ensure that their systems will grow with them, not only in increasing computing power and storage capacity but also in capability for modification to increasing availability requirements.

As with any high-growth market, the HA systems market will, after a period of sustained growth, undergo consolidation. This consolidation will coincide with the institution of HA system standards for interconnection devices, software and hardware components, allowing users to cluster an increasing number of (legacy) systems. The ability to incorporate existing (perhaps even heterogeneous) systems into an HA system cluster will make loosely clustered HA systems an attractive choice for users.

Cost Justification

Which system solution a customer chooses to support a specific application or workload is based primarily on the business cost of the loss of that application. On an OLTP network supporting airline reservations or electronic funds transfer systems, the cost of workload interruptions is easily quantifiable. Most users supporting these application types employ AL 4 solutions, which virtually eliminate service disruption. AL 4 solutions are typically referred to as fault-tolerant and are most notably produced by Stratus and Compaq/Tandem. While many vendors are beginning to offer AL 4 solutions, the track record of these two establishes their leadership position.

AL 4 systems impact a purchaser's pocketbook significantly more than AL 1 through AL 3 products. However, if even a few minutes of planned or unplanned system outages per year would cost more than the difference in price between an AL 1 through AL 3 system and a high-end fault-tolerant solution, the purchase of an AL 4 system should be automatic.

Customers should perform a detailed risk analysis for any application or workload being considered for protection under some level of HA solution. Once a cost analysis has been done, the cost of an outage will often go a long way toward justifying the additional price of the solution. In many instances the financial loss incurred by even a single outage will more than justify the price of such a solution.

▶

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About the author

zero-downtime: user fantasy becomes reality

by Kelli Wiseth

▶ The requirement for "continuous availability" applies to a larger sector of business applications than ever.

Ten years ago, fault-tolerant, high-availability computing was a niche market, albeit a vital one, that included business-critical applications such as ATMs, stock trading and emergency services. For these and other critical applications, 24 x 7 wasn't just a goal; it was a necessity.

A lot has changed in the past decade. High-availability computing is now in the mainstream. Today's emerging Internet and intranet applications, driven by the concomitant revolutions of electronic business and direct customer communications, have clear-cut requirements for continuous availability. End users and customers, weaned on 24-hour ATMs and payment card authorization systems, have come to expect zero downtime.

Until recently, the promise of 99.9% availability was accepted by most businesses. But today, there are many applications whose requirements are not met by 99.9% availability, including:

- ATM transactions, point-of-sale transactions and electronic funds transfers
- Computer-aided dispatch
- Electronic business
- Internet banking
- Travel and reservation systems
- Patient services

Businesses that depend on continuously available systems cannot settle for 99.9%. For applications in which constant customer accessibility is crucial, the fault-tolerant NonStop® Himalaya® server

Real-world Availability: Outage Minutes/Year

[illegible]	[illegible]	99.999%	100%
[illegible]	[illegible]	5	0

solutions are designed to provide well beyond 99.9% availability. The Tandem Division of Compaq Computer Corp. calls it "continuous availability."

Continuous availability is the reason that NonStop Himalaya continues to be the leading platform in industries where zero downtime is a baseline requirement. Point in fact: NonStop systems handle more than 90% of the world's securities transactions, 66% of the credit card transactions and 80% of all ATM transactions. In addition, they are used by 35 of the world's largest telecommunications companies.

But the need for continuous availability goes beyond these business sectors. Every organization today must weigh the impact of downtime in terms of lost revenue and lost customer confidence, then evaluate the need to increase the availability of its systems. According to the Standish Group, a research advisory firm in Dennis, Mass., 60% of the mission-critical applications in production will be operating 24 hours a day, seven days per week by the year 2000. In the chart below, Standish Group shows the impact of downtime, in terms of outage cost per minute, for ten business-critical applications.

Outage Cost Per Minute

[illegible]	[illegible]
[illegible]	[illegible]
Customer service center	$3,700
ATM/POS/EFT	$3,500
Messaging	$1,000

The NonStop Himalaya line from Compaq is truly capable of zero downtime. The NonStop part of its name is well-deserved. One U.S. stock exchange that relies on NonStop Himalaya solutions has had no downtime in 18 years. None. Not for maintenance. Not for software upgrades. Not even to add more processors or storage. Absolutely no downtime at all.

Setting the standard

As the leader in continuous availability for more than 20 years, the Tandem Division has continually set the standard against which availability solutions are measured. And, since Compaq completed its merger with Tandem, the company has invested considerably in R&D for the NonStop Himalaya platform, as well as in the NonStop architecture. "Himalaya is a key part of Compaq's enterprise strategy," says John Rose, senior vice president of Compaq's Enterprise Computing Group. "We've expanded that strategy to anchor the very high end for the most demanding organizations around NonStop Himalaya."

Compaq's strategy for enterprise computing, which is called the E2000 Platform Architecture, enables organizations to implement standards-based products for building IT infrastructures that can be leveraged well into the next century. (Readers can learn more about this strategy by going to www.compaq.com/products/servers/e2000/index.html.) Components of Compaq's E2000 Platform Architecture include ProLiant servers, Fibre Channel-based storage products and ServerNet interconnects.

Key technologies which are part of Compaq's enterprise

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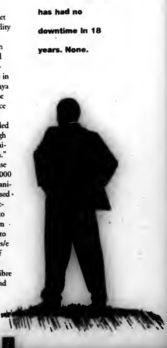

24 x 7

Real-world Availability: Outage Minutes/Year

	[illegible]	95%	99%	99.9%	99.99%	99.999%	100%
Outage: Minutes/Year	[illegible]	26,000	5,000	500	50	5	0

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Outage Cost Per Minute

Application	Cost / minute
Number portability	$14,400
ERP	$13,000
Supply chain management	$11,000
Electronic commerce	$10,000
Internet banking	$7,000
Universal personal services	$6,000
Customer service center	$3,700
ATM/POS/EFT	$3,500
Messaging	$1,000

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The integrated architecture of Himalaya means that operations from the highest level down to the lowest continue without missing a beat.

User outage minutes and relative availability

strategy originated within the Tandem Division. For example, the ServerNet interconnect, which is used to create Windows NT Server clusters, is based on high-speed redundant routing technology that is core to the NonStop Himalaya architecture. And Microsoft Cluster Server software (MSCS, formerly known as Wolfpack), which enables multiple ProLiant Servers to function as a Windows NT Server cluster, is a system-level messaging infrastructure for which Tandem provided technology based on the Himalaya architecture.

NonStop architecture features like these provide the capability for a business-critical application to be always available. Always available means just that: Despite virtually any type of sys-

Fault tolerance, integrity inherent in layers of Himalaya

NonStop Himalaya applications and solutions take advantage of data integrity and fault-tolerant capabilities inherenr in all the layers underneath. For example, the application is partitioned across several processors, dynamically using additional processors, defined by response time requirements. Applications transparently use additional or fewer system resources, as determined by business requirements, without special knowledge by the programmer.

Integrated manageability tools provide comprehensive systems management capabilities to improve performance, responsiveness and efficiency in a multiplatform, enterprise computing environment.

ServerNet routing technology provides high-performance interconnection, moving traffic in an any-to-any fashion between system components: processor to processor, processor to disk, disk to disk, and so on. ServerNet technology provides low-CPU overhead, fault tolerance and data integrity through error checking, scalability up to 1,000,000 network elements, and low cost.

Tightly integrated parallel relational database and transaction management software give applications access to the parallelism of NonStop Himalaya servers, providing limitless scalability, continuous availability, and absolute data integrity. This software is designed especially for critical data warehouse and OLTP applications.

The distributed NonStop Himalaya operating system is the ideal foundation for business-critical applications. Unique process pair technology means applications always get the data they expect. If an application process, a network process or processor fails, a backup process takes ovet, transparently to the uset.

Fault-tolerant, message-based, shared-nothing architecture connects from two to 4,080 processors. Each has its own instruction unit, memory, router connection and copy of the operating system.

tem failure, your customers will still be able to move around funds, buy and sell shares of stock, or log on the Net to complete a secure, electronic transaction at your web storefront.

Always available also means that spikes in processing volume won't bring a system to its knees. On Oct. 29, 1997, the New York Stock Exchange and the NASDAQ Exchange processed more than 1 billion shares each—for the first time ever. At times during that most frenetic of days, network traffic reached more than 200 messages per second. According to the *San Francisco Chronicle*, "the system was capable of handling up to 300 [messages per second] without batting an eye." At the heart of the computer systems at these two exchanges are NonStop Himalaya servers.

High Availability for Huge Data Warehouse

Dayton Hudson Corp. is one of the largest U.S. general merchandise retailers, ranked 27th on the Fortune 500 list. It operates nearly 1,100 stores in the U.S., including Target, Mervyn's and its own quality merchandise department stores.

Dayton Hudson employs a data warehouse solution from Compaq's Tandem Division to manage information about sales, inventory, profitability and in-stock levels for all 807 Target stores, and will also soon incorporate data from its two other divisions. This data warehouse, one of the world's largest, is based on the highly scalable and reliable Tandem NonStop Himalaya technology from Compaq. This solution won Dayton Hudson the Data Warehousing Institute's 1998 Best Practices Award.

"NonStop Himalaya technology provides us with the most scalable and available solution to manage [the] data explosion across all divisions of our company and to leverage it for continuing competitive success," says Brigid Bonner, vice president of Network and Computer Services at Dayton Hudson.

One major strength of the data warehouse has been its ability to stay online during basic database operations. The company recently moved more than 100 Gbytes of a 200-Gbyte table to new disk drives while users maintained full access to data. The system generates more than 100,000 reports a month, often with more than 120 reports running at the same time.

The data warehouse has reduced operational costs, and has also allowed Dayton Hudson to better its inventory management by improving its margin, markdowns and in-stocks. In addition, its micromerchandising strategies are made more effective by fully leveraging data on trends, seasonal products and the effectiveness of advertising.

Continuous availability formula

NonStop Himalaya solutions achieve this robust level of scalability and availability thanks to hardware, software and system-level services that are tightly integrated from top to bottom. This means that, despite hardware or software failures, operations from the highest level to the lowest continue without missing a single beat.

As a network of Himalaya servers grows to include thousands of processors on a global scale, the operating system presents a single image that enables users, system managers and applications to interact with the entire network as if it were a single system.

Other high-availability systems are comprised of components from a large selection of vendor solutions at each layer. When a business chooses a highly available enterprise solution, the cost of downtime, support and maintenance, and, ultimately, customer satisfaction, form the basis for a decision. The tight integration of NonStop Himalaya solutions makes them far easier to manage and support than a hodgepodge of components from disparate sources.

When disaster strikes

Even the most fault-tolerant, integrated hardware and software solution is useless in a natural disaster. NonStop Himalaya solutions can be integrated with additional software facilities, such as NonStop RDF (Remote Database Facility) software, for a full online disaster recovery solution. With NonStop RDF, you can maintain multiple, current online copies of a database on backup systems you designate. If the primary database becomes inaccessible, you can quickly switch your application to a backup site and resume processing—with minimal disruption of service or loss of data. On-site protection can be

▶ **Just because it's planned doesn't mean it's not downtime. An organization still incurs high costs, in labor and in failure to meet service levels to customers, while a system is offline.**

The integrated architecture of Himalaya means that operations from the highest level down to the lowest continue without missing a beat

User outage minutes and relative availability

	Windows NT Server	Windows NT Server & MSCS	Windows NT Server/MSCS & NonStop Software	NonStop Himalaya operating system & NonStop Software
[illegible]	[illegible]	3,150	1,150	180
[illegible]	[illegible]	18x	6x	1x

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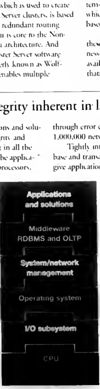
Applications and solutions
Middleware RDBMS and OLTP
System/network management
Operating system
I/O subsystem
CPU

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achieved with the NonStop Himalaya solution certified to Network Equipment Building Systems (NEBS) requirements for Seismic Zone 4, which can withstand power outages, temperature fluctuations and earthquakes.

Not all downtime is accidental

Planned maintenance and up grades are a major cause of downtime. Just because it's planned doesn't mean it's not downtime. An organization still incurs high costs, both in labor and in failure to meet service levels to customers, whenever a system is offline.

NonStop Himalaya is particularly efficient in this area, too. On other systems, hardware upgrades, operating system patch installations, application re-partitioning and other operational tasks must be scheduled either after-hours or on weekends. But with continuously available NonStop Himalaya solutions, virtually all operations can be performed while the system remains online.

Go back to Oct. 29th, 1997. In the midst of the heaviest trading day in Wall Street history, not only were processors added to the system, but a disk drive, close to reaching capacity, was upgraded—ALL without causing a ripple.

NonStop Himalaya solutions allow easy database reorganization and the ability to install software fixes while your business is online. The database can be kept online and available, and can process data at the same time you back up the database or restore a partition.

Features such as the ability to perform online maintenance and reconfiguration, swap a failed board or peripheral, add processors or storage, or hot-swap controllers and processors, are making their way into other hardware platforms as well, but NonStop Himalaya continues to lead in capabilities such as online change and operations management. The system detects the presence or absence of a component and quickly re-integrates a replaced component into the system. This enables business-critical applications to be continuously available.

Cost of ownership

To many organizations, features like these sound prohibitively expensive. But are they? To tally the full cost of ownership of an enterprise computing solution, an organization must evaluate the direct purchase costs, the cost of hardware and software maintenance, and the cost of ongoing support, over the full lifecycle of the solution. They must also factor in the cost of downtime (both planned and

▶ **According to Standish Group research, 72% of mission-critical applications experience at least nine hours of downtime per year. That's over $5 million a year for one application.**

High Availability, *Oui.* Downtime, *Non.*

Over the past decade, the SBF-[illegible] been Europe's [illegible] stock exchange. [illegible] exchange, which [illegible] throughout [illegible] in recent [illegible] of more than [illegible] Total market [illegible] currently exceeds 4 [illegible] Tandem [illegible] has devel-[illegible]CAC automated trading system. Running on the full range of NonStop Himalaya servers, including the newest S70000 with ServerNet clustering technology, the solution takes advantage of unique parallel hardware and software to ensure that transactions are processed and that information is distributed without fail 24 hours a day.

"The 'nonstop' dimension is very important," says Yves Rouchou, senior vice president at the SBF-Paris Bourse. "The securities industry has become much more competitive in recent years. If an exchange cannot guarantee performance and high availability, business can quickly be lost to other marketplaces."

The automated trading system can handle as many as 100 messages per second, processing up to 40 orders per second, with a response time of less than two seconds on most transactions.

The NSC-SuperCAC solution has been adopted by the Chicago Mercantile Exchange, Toronto Stock Exchange, and exchanges in Sao Paulo, Lisbon, Mexico, Morocco, Tunisia and Warsaw. This widespread acceptance has positioned NSC-SuperCAC as the world's leading automated trading system for exchanges.

NonStop Himalaya servers at the core of your business

A group of visionary engineers laid the foundation over two decades ago. Design a system from the ground up that is architected to provide the essence of success for every business. NonStop systems did just that from the beginning, and will continue to do so into the future. Continual refinements over the years have built on the original successful fundamentals of NonStop systems:

- Availability second to none
- Virtually limitless scalability
- Data integrity
- Manageability throughout

Your business depends on continuous availability to compete in today's online world.

Today's NonStop Himalaya server is the most powerful, reliable resource for your business.

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When you consider the full benefit of continuous availability in mission-critical environments, a NonStop Himalaya fault-tolerant server can be more cost-effective than other solutions. Continuous availability and fault tolerance is inherent, out of the box. No add-on hardware or software is required to reach zero downtime.

According to the Standish Group, 72% of mission-critical applications experience at least nine hours of downtime per year. That comes to over $5 million a year for one application. And that's about what you could expect at 99.9% availability. But with the NonStop Himalaya system, you can realistically expect to push your downtime to zero, keeping hundreds of thousands—or even millions—of dollars in the corporate coffers.

Fitting a specific solution

No single solution fits all environments. With a portfolio that spans hardware, software and services, Compaq provides integrated, high-availability solutions tailored to meet a customer's requirements for availability and performance—and for their budget as well.

Compaq's thrust into enterprise computing, with the addition of Digital Equipment and Tandem, creates a full spectrum of solutions. For departmental applications, there is a range of industry-standard servers designed to meet your needs. For important applications such as e-mail and departmental databases, Compaq offers more robust solutions, such as clustered ProLiant servers built using industry-standard ServerNet interconnects, and running Microsoft Cluster Server for failover and hot standby.

Finally, for environments where downtime is not an option—a 24x7 customer support center, credit card transaction processing or a web storefront—Compaq offers the NonStop Himalaya. This solution completes the high-end of Compaq's enterprise strategy, built around the industry standards that Compaq is now driving into the enterprise—the message-based infrastructure that has now been implemented in Microsoft Cluster Server, and ServerNet, the de facto standard for high-speed cluster interconnect.

Advancing the evolution of these technologies and the NonStop Himalaya architecture is a cornerstone of Compaq's strategy. With continuously available systems running your business-critical applications in a 24x7 global economy, you too can expect the ultimate in uptime. You can expect your enterprise to maintain its competitive edge well into the next century.

And you can be assured that your company will always be open for business. ■

Kelli Wiseth is a freelance writer based in San Mateo, Calif. She specializes in the coverage of network computing issues. She can be reached by e-mail at kwiseth@hooked.net

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now it makes sense.

OPEN
24 x 7
Closed
for
Inventory

nonstop availability
open for
business...

always.

COMPAQ

To learn more about how NonStop Himalaya can make continuous availability a reality for your business, call 1-800-NONSTOP, ext. 2500 or write NSA@compaq.com

Data mart users must try, try again

CONTINUED FROM PAGE 67

would install marts for other groups.

That first mart consolidated reference data, which included staff information, building locations and data relating to regulatory requirements such as the handling of hazardous substances in lab areas. But would that data be important to anyone else?

POLITICAL QUESTIONS

The various source systems for the data used different coding schemes, and there were political challenges in determining which organizations had responsibility for which data, said Patrick Nolan, MIS engineering manager at Stanford.

Now that the university has additional marts, which cover areas that range from capital asset management to uniform resource locators, it is attempting to retrofit some order by standardizing data-extraction routines using Informatica Corp.'s Powermart tool and by building formal data models.

Even when organizations have the best intentions to plan their data mart architectures up front, they often find themselves playing catch-up as the competitive environment changes.

For example, NationsBank Corp. in Charlotte, N.C., last year, built the Customer Relationship Information System (CRIS), which tracked business accounts. This year, it plans to leverage its CRIS experience with a mart covering the bank's 13 million consumer households, plus a new Balanced Scorecard system to encourage and more effectively measure goals such as customer relationship building, operational excellence, customer satisfaction, risk management and financial results.

The initial IBM SPa architecture seemed fine for both marts until the parent company acquired Barnett Bank, Florida's largest retail bank, late last year. That prompted the idea that building a hub-and-spoke enterprise data warehouse to feed its data marts would be the most maintainable approach in the long run.

So the architecture shifted to DB2 UDB, running on an IBM mainframe. The bank also has added Hyperion Solution Corp.'s Essbase and Wired for online OLAP World Wide Web presentation tools that are staged by Decisionism, Inc.'s Aclue. Aclue is an OLAP data-migration tool that integrates key CRIS business data with data from more than 20 pre-data warehouse sources.

MORE THAN ARCHITECTURE

If shareholders give the go-ahead this week, NationsBank's data mart developers may face yet another challenge: a merger with BankAmerica Corp. in San Francisco, which already operates its own NCR Corp. Teradata data warehouse.

But architecture may be only half of NationsBank's battle. Deciphering user reporting needs for building the query environments and business views within the marts has been a struggle against inexperience.

"It's been difficult to apply lessons learned building CRIS in building newer decision-support systems," said Sue Kilmartin, NationsBank's senior project manager for the data marts. She noted that users tend to ask for all the data they can get without communicating how they might use it.

"Management decision support is a new area to most of us who came from primarily transaction-processing and operational-decision-support backgrounds. We're learning and adjusting as we go," she said. □

Baer is a freelance writer in Bedford, Mass.

ERP, warehouse unite

CONTINUED FROM PAGE 67

"Because we are a seasonal business, we only get one shot at getting it right," said Justin Wheating, chief financial officer at Burton.

"It's extremely important for us to know what our business year is going to look like. We get our orders in by March and are shipping from April to October," be said.

"Accuracy on the inventory side is critical," Wheating said. "Because we change our whole product line every year, any inventory we have left becomes old, and you have an instant markdown if you haven't gotten it to the retailer on time."

MANAGING GROWTH

Burton's major information systems challenges included finding ways to address its explosive growth — sales increased about 20% in the past year — and connect its three offices in Vermont, Japan and Austria. The company had an advantage in that it had grown so quickly it had no old technology to work around.

Using SAP solved half of the problem: Burton was able to capture transactional data from all three offices and collect it in a central location, the data warehouse.

But the company soon found that if it needed to run any nonstandard reporting on the SAP system, the IS staff couldn't handle the effort because it was too small for that level of complexity.

"We discovered that it would be nice to have an OLAP reporting database where the information could be flexible and readily accessible by our management team," said Jennifer Mincar, Burton's MIS director.

"We also needed something that would allow an inventory manager or a product manager the ability to track inventory without running a reporting request through the IS department," she said. "A wide range of people need this information, like our sales, inventory and operations teams and our IS group."

Most of Burton's executives and about 70% of its middle managers now use the system, Mincar said. □

Kempster is a freelance writer in Milford, Mass.

Don't be doomed by dirty data

CONTINUED FROM PAGE 67

Now, imagine the process of going through millions of records to reconcile the conflicts and make corrections. Some organizations allocate more than a dozen full-time employees to initial data cleansing. Failure to do so results in bad decisions, angry customers and frustrated business users.

A THANKLESS TASK

As you can imagine, it is a thankless job, and most business users lack the appreciation, understanding and patience needed to support information technology professionals who undertake the laborious process of cleansing that data. Who can blame them? They see it as time-consuming, tedious busywork that offers them no immediate payoff.

Nevertheless, it is imperative that you devote the time, money and resources to cleansing legacy data required for the data warehouse. Otherwise, when that raw data is aggregated, distilled and summarized, the inconsistencies and inaccuracies will distort and corrupt the summary views in ways that will be tough to trace or correct.

If your data warehouse project is normal, you'll spend about 75% of the total implementation time on back-end issues such as data extraction and data cleansing. The best strategy is to involve business users and systems analysts — the very people who actually will be using the data — right off the bat.

Data cleansing is a collaborative effort between business users familiar with the semantics (meaning) of the data and the systems analysts who know the program-specific meanings.

GARBAGE IN . . .

Don't even think about loading raw data into your data warehouse. The old adage "garbage in; garbage out" is just as true today as it ever was.

Cleansing applications should investigate, standardize and integrate legacy data. To expedite a departmental data warehouse implementation, consider limiting your data cleansing to the subset of data that's relevant to the departmental data warehouse.

Although IT staff can identify which legacy data doesn't have to be included in a data warehouse based on current usage of data, they will need help and cooperation from business users to identify and cleanse operational data. Users should be primarily responsible for determining the business value of data. Don't rely on systems integrators — they don't understand the business value of the data.

When user requests drive the data warehouse project, users are more likely to assist with data cleansing. Therefore, structure the data warehouse on usage, not on the relational model.

Automation tools can help, but they can't change the underlying fact of life: Data cleansing is labor-intensive and ongoing. There is no magic "load-and-go" bullet.

A data warehouse grows by leaps and bounds in the first couple of years. The size of the database will compound the data-cleansing requirements.

With those insights in mind, go forth and cleanse! □

Atre is president of Atre Associates, Inc., a consulting firm in Santa Cruz, Calif., that specializes in data warehouse and database technologies. Her E-mail address is shaku@atre.com and her DataWareMart methodology can be found at www.atre.com.

Seven steps for cleansing your data

1. Identify data of interest and the business uses of the data.
2. Analyze data for content, meaning and importance.
3. Determine which data to include in the data warehouse.
4. Write pseudocode procedures for data extraction, conversion and population.
5. Determine the suitability and effectiveness of automated cleansing and extraction tools.
6. Consider an iterative, ongoing data warehouse process.
7. Extract data, populate the data warehouse and work in parallel on your online analytic processing implementation.

— Shaku Atre

Lotsa talk, little walk

By Gary H. Anthes

There's no shortage of statements supporting information security, but a *Computerworld*/ Ernst & Young survey finds little action to back up the words

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MORE ONLINE

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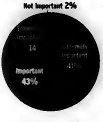

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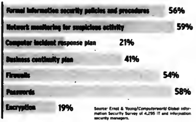
What protective measures have you taken? *



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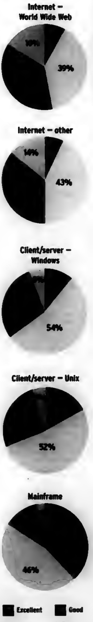
Internet — World Wide Web

Internet — other

Client/server — Windows

Client/server — Unix

Mainframe

Source: Ernst & Young/Computerworld Global Information Security Survey of 4,255 IT and information security managers.

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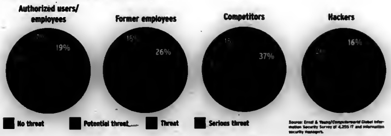
Authorized users/ employees

Former employees

Competitors

Hackers

Source: Ernst & Young/Computerworld Global Information Security Survey of 4,255 IT and information security managers.

A career in tatters
Why a woman wound up a convicted hacker.
Ms. MIS,
Page 72

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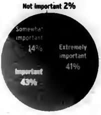

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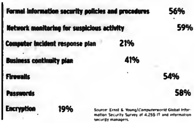

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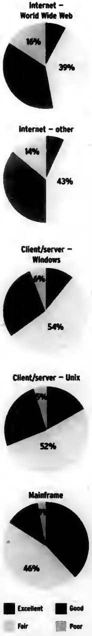

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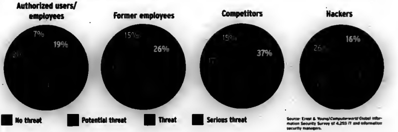

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MS. MIS
WOMEN IN INFORMATION SYSTEMS

Behind the hacking

A woman's sad story highlights the emotional devastation of sexual harassment and how it left her career in tatters

BY LAURA DIDIO

S[illegible] DEVI SINGLA is an unlikely computer hacker.

But last spring, the 43-year-old India native, educated in the U.S., became one of the first women convicted of computer hacking in the U.S., according to an FBI spokesman.

Singla's crime: penetrating a Coast Guard personnel database and deleting information in July last year, two months after she left the agency's employ as a computer specialist.

But what this tale is really about is how badly a situation can spiral out of control when a woman feels she is the victim of sexual harassment and her claims go unheeded.

There's bitter irony here. Singla constructed the very database she hacked, and she was considered so good as a database administrator and project manager that she had been chosen in 1994 for the Coast Guard's Executive Potential Program. Several of Singla's former co-workers describe her as a bright, outstanding worker.

So what prompted Singla, a happily married mother of two, with a spotless record, according to federal authorities, to commit a felony?

From 1993 to 1997, Singla was the lone woman in a department with 15 men, following the only other woman there, who transferred out after charging a supervisor with harassment.

Singla says male colleagues routinely engaged in gender bias toward her. "They overrode my decisions and technical suggestions to outside government contractors in my specialty area of databases," she says. At branch meetings, Singla claims, she was publicly castigated by her colleagues. Other administrators took it upon themselves to interfere in her projects, calling contractors behind her back.

Each time an incident occurred, Singla protested. However, "the supervisor excused their behavior and told me to ignore it because they were under stress," she says.

And although she doesn't allege there were improper advances or touches, Singla says the men's actions were sometimes buffoonish. For example, they perverted the acronym for the Coast Guard group in which she worked — called Personnel Information Management at the time — by nicknaming it " 'penises in motion,' which I found very offensive," Singla says.

Why stay when information systems jobs are plentiful? "I loved the work, and I got along very well with my end users. My instincts told me to tough it out. I thought, 'Why should I leave because of these men?' "

When repeated complaints didn't produce results, Singla filed an internal Equal Employment Opportunity complaint against the supervisor in December 1996. Her once-stellar performance reviews went downhill. In May last year, Singla left the Coast Guard for an IS position at the Patent and Trademark Office.

In early July, Singla says, she got word through her attorney that the agency wouldn't forward her personnel records to the patent office unless she dropped the harassment complaint. A Coast Guard spokesman, Cmdr. Mike Lapinsky, denies that, saying, "appropriate records were forwarded."

"It was the straw that broke the camel's back," Singla says. That evening, anger triumphed over conscience. She used her home computer to hack the Coast Guard's network. "It was a spur-of-the-moment action; I deeply regret it."

No one, including Singla's family, co-workers and supervisors at the Navy, the Coast Guard or the patent office, condones the hacking, however much they sympathize and believe her on the harassment issue. Hacking after all is a federal crime. Three months ago, Singla was sentenced to three years of supervised probation and five months' house arrest. She also was fired from the Patent and Trademark Office.

One must ask: Is Singla credible, and did the charges have merit? "Yes," says Granville Hurley, a financial specialist at the Federal Transit Administration who investigated the complaint. Hurley interviewed Singla's co-workers, bosses and the woman who had lodged a sexual harassment complaint in 1992. "Singla was credible, and I definitely believed there was basis for her complaint," Hurley confirms.

Because Singla is proceeding with her complaint against the Coast Guard and appealing her dismissal from the patent office, neither agency will comment. Lapinsky, the Coast Guard's spokesman, called Singla's charges "a confidential matter."

The upshot of all this? Everyone loses.

The Coast Guard, though it ultimately recovered its data, is tarnished by the two complaints. The patent office is also a loser. It hasn't been able to replace Singla, agency sources say.

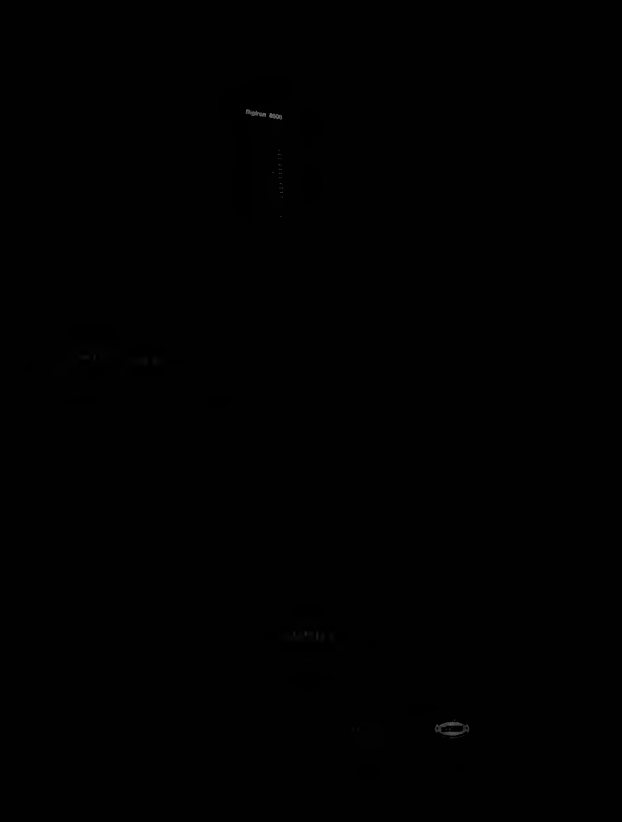
Singla is the most obvious loser. She's a convicted hacker who has lost her job and reputation. Finding another IS position will be difficult.

In hindsight, Singla says, "If I had it to do all over again, I'd leave immediately."

That, perhaps, is the biggest loss of all: that Singla or anyone should conclude that fighting sexual harassment is futile. ☐

A farewell

They say change is constant. After nearly three years of writing Ms. MIS, I'm giving the reins to someone else and leave Computerworld to pursue other opportunities. Writing Ms. MIS has been extremely rewarding, and I thank my editors at Computerworld for the opportunity and my readers for their sometimes caustic, sometimes humorous but always thought-provoking feedback. Keep it coming. There will always be the need for regular coverage of women's issues. Thanks for reading! — Laura DiDio



Digitron 8500

LAST YEAR, AMERICAN COMPANIES SPENT
$320 BILLION ON INFORMATION TECHNOLOGY
AND INCREASED PRODUCTIVITY BY 1.4%.

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THIS IS THE RETURN ON INVESTMENT
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ED YOURDON

SIGN UP USERS AND CUSTOMERS FOR THE Y2K BUG-BUSTER CORPS

Now that information technology organizations have fewer than 500 days before Jan. 1, 2000, they should be enlisting the help of end users throughout the organization as well as customers from outside.

Although that may seem obvious, it's counterintuitive in many IT shops: Users and customers are seen as the source of endless complaints and demands. But because most organizations won't have enough time to test the remediated systems thoroughly, the internal end users and external customers should be viewed as an inexpensive army of bug busters.

Cynics might argue that new systems are always introduced that way — in the rush to deliver systems on time, the IT organization skimps on testing, leaving the users to find the final few bugs. But it's rare for the IT organization to go out of its way to solicit user feedback. The only common exceptions are companies such as Netscape or Microsoft that release beta versions of their products with the expectation that the users will help track down the more obscure bugs.

FIND 'EM FIRST

The obvious task for a year 2000 bug-buster corps is to look for bugs in the organization's internal systems. Sooner or later — preferably, sooner — organizations will have to release into production the systems they test. We won't really know if the systems will handle post-2000 dates until New Year's Day, but the more time those systems spend in a live production environment, the better.

When those systems are running, we are going to have tens of thousands of users keying in transactions, looking at output reports and responding to instructions and decisions made by those systems. If a system experiences a *hard* failure, everyone in the IT department will know it. But if a date field in an output report is slightly garbled, it's possible that only an end user will see it. A minor bug might cause the end user to do nothing more than curse, but if we offer a bug-buster coffee mug or a $50 savings bond for each such bug report, it could create an entirely different attitude.

We also could ask our bug-busters to look for bugs in the interface between the organization's systems and the systems of vendors, partners, suppliers and customers. Again, the hard errors will be spotted by the IT department — but there are likely to be thousands of subtle ones. An end user may be the first one to notice that a transaction received from vendor X or customer Y looks a little weird and needs to be investigated further. That may require a phone call to the vendor or customer, and the end user is in a better position to do that than a programmer on the year 2000 project team.

While we're at it, let's get the bug-busters to help us find work-around solutions for the bugs that can't be fixed or the systems that we don't have time to repair. Once again, IT will handle the hard problems, but there are likely to be thousands of minor problems, glitches and disruptions that users will have to cope with on their own. The earlier we get them started on this process, the better. The IT department can provide support with an internal Web site that collects tips, guidelines, work-arounds, shortcuts and other pragmatic advice.

CALLING ON CUSTOMERS

For that matter, why limit this to the corporate insiders? Why not also use external customers? Most organizations are mailing fliers to their customers, advising them (as my bank advised me last month) to "act now and make sure that any items in your home or office that are computer-driven are year 2000-compliant." But next year, we should mail fliers that say, "We're pretty sure that we are year 2000-compliant, but we'd appreciate your assistance in helping us stamp out any little bugs that we may have overlooked. If you spot anything that looks amiss, please give us a call or send us E-mail."

As every IT manager well understands by now, year 2000 is an enormous job. If we treat our end users and external customers as part of the team, we have a better chance of getting through the final 467 days without missing some subtle, but ultimately nasty, show-stopper bugs. □

Yourdon heads the year 2000 service at Cutter Consortium in Arlington, Mass. His most recent book is Time Bomb 2000. *He can be reached via E-mail at ed@yourdon.com.*

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f.y.i.

I'll get to that – someday

DO YOUR IT professionals believe they can't exercise their creativity or be strategic partners with business managers? You might want to look at how they're spending their time.

A recent study finds that the average information technology staff member spends more than three days per week — almost 70% of his time — on day-to-day operations. And only 8% of IT staff members focus on decision-support or think about the future leveraging of technology for strategic advantage.

That finding by The Hackett Group in Hudson, Ohio, was part of a survey on the efficiency and effectiveness of IT operations. The study covered 80 companies with annual revenue between $30 million and $44 billion.

Christine Gattenio, a vice president at The Hackett Group, cites technology's rapid change as a factor in how IT staffers spend their time. The changes, she notes, can make a company's IT infrastructure so complex that it can be difficult to manage. Ironically, the changes can diminish the IT staff's potential as a strategic partner. Technological changes are harder to manage, and companies say they "need help in figuring out how to leverage" new technologies, she said.

The study also found that the average company spends $9,218 per year on IT per end user, excluding one-time investments in software and infrastructure. The top 25% of companies in the Hackett database spends less than $3,387; the bottom quarter spends more than $11,160. Factors in the disparity include:

▸ **Uniformity in operating systems and programming languages and utilization of data standards.** Companies in the top 25% have pushed the implementation of standards across nearly three-quarters of their IT operations. But in the bottom quarter of companies, it's only 40%.

▸ **The number of outsourcing agreements.** Top-quarter firms standardize on far fewer suppliers than bottom-quarter companies in all areas of IT outsourcing.

— *Rick Saia*

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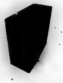

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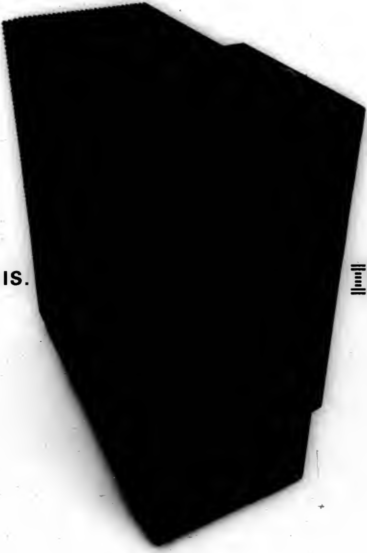
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Internet Addiction:

Is it just this month's hand-wringer for worry-warts, or a genuine problem?

By R.W. Greene

KATHERINE STREETER

Q: How do you know when you're addicted to the Internet?

A: You start tilting your head sideways to smile. You dream in HTML. Your wife says communication is important in a marriage, so you buy another computer and a second phone line so the two of you can chat. . . .

For many people, the very notion of "Internet addiction" is enough to produce guffaws. The above list of "symptoms" can be found in various permutations all over the World Wide Web. One site consists of an elaborate, 12-step parody of Internet addiction recovery — complete with its own Serenity Prayer.

But for growing numbers of people, such jokes are falling flat.

"My marriage is breaking up because of my husband's addiction, which seems to have destroyed not only our marriage but my husband's personality, his values, his morals, his behavior and his parenting," says one subscriber to an Internet addiction support mailing list. The subscriber said she is a professional in her 40s and asked to be identified only as Rachel. "I had no idea what the potential for destruction was," Rachel writes.

Mental health professionals say they read and hear such sentiments in their E-mail and offices with increasing frequency.

The bright graphics of the Internet — as well as its anonymity and speed — are too much of a good thing for some users, who will neglect family, work and school to stay online.

Maressa Orzack, a therapist in Newton, Mass., tells of one man who threw his wife's modem out the window in disgust at her refusal to log off — only to have her beat him in retaliation. In another case, a boy whose phone line had been cut by worried parents climbed out a third-floor window to reattach it.

According to New York-based research firm Jupiter Communications, Inc., there will be more than 116 million Americans online by 2002. Some researchers say 5% to 10% of Internet users have the potential for an addiction problem.

Though the number of people being treated is very small — perhaps no more than a few hundred nationwide — many mental health professionals say the problem is no fad and bears close watching as the world gets increasingly wired.

Almost nobody blames the Internet itself for people's overreliance on it. And therapists recognize that an Internet addiction (though not everybody uses that word) carries none of the destructive power of addictions to drugs or alcohol. But something is going on, most agree.

"[There are] three components that need to be present for any addiction: increased tolerance, loss of control and withdrawal," says Steven Ranney, coordinator of research and training at the Illinois Institute for Addiction Recovery at Proctor Hospital in Peoria. He believes Internet addiction qualifies.

SOME DOUBTS

But eyes still roll in some therapeutic quarters. Columbus, Ohio, psychologist John Grohol contends the incidence of extreme Internet use, while it may exist, is largely the creation of a mainstream media always eager to focus on "the dark side of the Internet."

"I just don't understand why there's this focus on the Internet," Grohol says. "People have been dropping out and getting divorced for years and years and years, for a myriad of reasons."

Bryan Pfaffenberger, an engineering professor at the University of Virginia in Charlottesville and the author of several books on the Internet, used to be a skeptic himself. "People who use the Internet and don't feel they have a problem with it probably react as if this is another one of these sorts of whiny victimization things," he says. "I used to think that . . . until a student of mine did a report on a bunch of recent research that's been done that indicates there's a real serious problem here."

"At my peak, I was playing [MUD games] sometimes 11 hours straight.

– Anonymous addiction newsgroup subscriber

MORE ONLINE

Internet addiction Web sites:

- **Center for On-Line Addiction:** ***www.netaddiction.com***
- **Internet Addiction Survey:** ***www.stresscure.com/hrn/addiction.html***
- **Internet Addiction (humorous and serious links):** ***www.unc.edu/courses/jomc191/addiction/#fun***
- **Psych Central:** ***www.grohol.com/netaddiction/***

SIGNS OF IMPAIRMENT

That research, though early and limited, tends to support Pfaffenberger's view. One of the most widely publicized reports was published in 1996 by Kimberly Young, a psychologist at the University of Pittsburgh, who studied 396 self-described "dependent" users of the Internet and 100 nondependent users.

In Young's study, dependent users spent an average of 38.5 hours per week online, whereas nondependent users reported fewer than five.

Though conceding that the study had "significant limitations," Young also found that 90% or more of the dependent users said they suffered "moderate" or "severe" impairment in their academic, interpersonal or financial lives. Another 85% said they had suffered impairment at work. By contrast, none of the nondependent users reported any impairment other than lost time.

Young, who recently published a book, *Caught in the Net: How to Recognize the Signs of Internet Addiction and a Winning Strategy for Recovery*, has established an Internet addiction consulting site. She also counsels people online — a practice that is effective, Young says, despite its obvious irony.

That treatment varies. Some users are simply counseled about improving their time management and self-discipline. Some therapists, such as Orzack, view obsessive online use as a symptom of deeper problems and try to treat them. At Ranney's hospital in Illinois, abstinence from the Internet is preached.

Similar problems were found in a 1997 survey of 531 students at the University of Texas at Austin conducted by psychologist Kathy Scherer. There, 98% of dependent users said they found themselves staying online longer than they wanted. More than a third reported problems in social, academic and work responsibilities that they attributed to overuse of the Internet. Almost half said they had tried to cut down but couldn't.

"It's really clear that it's a problem for some people," Scherer says, particularly in higher education, where Internet connections are becoming mandatory. Scherer conducted self-help counseling workshops for students concerned about their Internet use at the University of Texas. It's worth noting, however, that no such workshops were held this past academic year because not enough students signed up.

The workplace isn't immune from such problems. Increasing numbers of supervisors discipline and even fire employees who spend too much time cruising pornographic and other non-work-related sites — that is, if the employers recognize the problem at all. In her study, Young tells of a 48-year-old secretary who went to her Employee Assistance Program for help with her inability to stay away from non-job-related Internet sites. The office rejected the secretary's request on the grounds she didn't suffer from a legitimate disorder. She was later fired when system operators noted her heavy Internet use.

A 24-year-old mailing-list subscriber who wished to remain anonymous says his online obsession with Multi-User Dimension (MUD) games had a definite impact on his college career.

"At my peak in 1993, I was playing sometimes 11 hours a day, sometimes 11 hours straight," he writes. "I did poorly in [more demanding classes] because I would work for 20 minutes and then go MUD for two hours, come back, work for another 20 minutes, then MUD for four hours, then go to sleep."

PUSHING BUTTONS

A recent study of 169 nonobsessive Internet users, done by Carnegie Mellon University in Pittsburgh over two years, stated: "Greater use of the Internet was associated with declines in participants' communication with family members in the household, declines in the size of their social circle and increases in their depression and loneliness."

That study made a big media splash — it ran on the front page of *The New York Times* — partly because its authors and sponsors, many of the latter IT vendors, expected the opposite result: a brave new world of expanded social interactions. The reality is more complex.

"People online stay safe because they can push a button and get rid of any unwanted visitor," Rachel writes. She has since separated from her husband. She writes of her spouse: "He would say really nasty things to me, then run up and get on the computer and be outraged that I wanted to discuss what he just said to me. I think if he had a magic wand, he would have zapped me into another dimension." □

Greene is a freelance writer in Southern California. His Internet address is rwgreene@ix.netcom.com.

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Monday, September 28, 1998

Fairview Park Marriott, Falls Church, Virginia

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A Full Schedule of Contemporary Topics

7:45am	**Continental Breakfast & Conference Registration**
8:30am	**Concurrent Sessions:** **Building an Internet Recruitment Strategy** *Tracey Claybrooke, Claybrooke & Associates* **Retaining the Best: Practical Retention Strategies that Work** *Barbara Mitchell, The Mitchell Group* **High Tech/High Touch: Creating the Recruiting Office of the Future** *Sue Keever, The Keever Group*
10:00am	**Sponsor Showcase/Coffee Break**
10:30am	**General Session:** **Strategic Staffing in a Competitive Environment** *Carlos Echalar, Litton PRC*
12:00pm	**Luncheon Keynote:** *Paul Gillin, Editor, Computerworld*
1:30pm	**Town Hall Forum** *Moderator Gary Cluff, Cluff & Associates*
3:00pm	**Sponsor Showcase/Coffee Break**
3:30pm	**Concurrent Sessions repeat:** **Building an Internet Recruitment Strategy** *Tracey Claybrooke, Claybrooke & Associates* **Retaining the Best: Practical Retention Strategies that Work** *Barbara Mitchell, The Mitchell Group* **High Tech/High Touch: Creating the Recruiting Office of the Future** *Sue Keever, The Keever Group*
5:00pm	**Program ends**

Selected Sessions Include:

Luncheon/Keynote Address

Paul Gillin, Editor, Computerworld

Paul Gillin, one of the industry's leading watchers of the Information Systems profession, will give you an up-to-the-minute view in this very special keynote address.

Building an Internet Recruitment Strategy

Tracey Claybrooke, President, Claybrooke & Associates, Inc.

As mass advertising reaches a consumer by television, radio, billboards, print media in various locations and venues - this same marketing/prospecting effort can take place on the internet to maximize your recruitment efforts. Learn about this and more in this session.

Strategic Staffing in a Competitive Environment

Carlos Echalar, Vice President of Staffing, Litton PRC

The program will address today's staffing issues from a proactive vs. reactive business approach. The program will also demonstrate a systematic 5 step approach to a full life-cycle staffing process and implementation across the business. Each step contains components and issues that need to be considered in developing and initializing a strategic plan of identifying and attracting today's top talent in an effective and cost efficient manner.

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Gary Cluff, President, Cluff & Associates

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as Gary Cluff, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

Registration fee includes continental breakfast, lunch and the complete Conference Resource Guide.

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THE NEW WEB WALKERS

By Natalie Engler

EAW's Mitchel Ahern: "The idea that you could study something in school and be a Web person without continuing to study at a serious pace is incorrect"

YUNALD/GRAY

Blurry job titles. Bifurcation. Business technologists. Big bucks. That about sums up the state of Internet careers for this year.

"Because it is such a fast-moving field, the titles don't have that much meaning," says Mitchel Ahern, webmaster at Eastern Acoustic Works (EAW) and chairman of the Association of Internet Professionals.

The solution: "People are hiring by skill sets," Ahern says.

At the same time, the gap between the utility infrastructure and business support is widening, says Steve Telleen, an analyst at Giga Information Group. "Over the next five to 10 years, people who deal with network administration, systems administration and basic infrastructure pieces may wind up working for an [Internet service provider]" instead of a Fortune 500 corporation.

Those who remain in corporations will need to become business-savvy communicators, analysts say. "One thing we're seeing in the association and in the industry is that people who can straddle the fence [between business and technology] are important commodities," Ahern says.

"It used to be that just being technical was enough," agrees Mark Liphardt, a senior technical executive in the Network Commerce Services division at AT&T Corp. "Now, you have to understand how the business operates, so you know how to integrate and automate what it does."

> There aren't enough people who really understand the subtleties of the business they are in
> – David Foote
> Cromwell Foote

Today, people who possess both sets of skills are in short supply and often can command six-figure salaries. That's because they are the key to successful electronic-commerce initiatives, asserts David Foote, managing partner of Cromwell Foote Partners LLC.

"There aren't enough people who really understand the subtleties of the business they are in and their customers," Foote says. "You can pick up technical skills until you're blue in the face, but you have to learn your customers as if you're one of them. You have to sit in their skin and look at the world through their eyes and ask 'What do they want us to deliver? What are they looking for?' "

"Whether it's cascading tile sheets or doing things with active server pages, there's a lot of interest in that capability," Liphardt says. "People who use the new methods are in demand because as the Web changes, what was new online yesterday is old today."

The most valuable Internet/intranet professionals will be those who combine a solid business understanding with technical skills. Webmasters, such as Ahern, who are in charge of content will remain in high demand among end-user companies. So will business technologists, such as Liphardt, and electronic-commerce experts, such as Bob Lavorgna. Here are their stories:

MITCHEL AHERN

Chairman, Association of Internet Professionals
Webmaster, Eastern Acoustic Works,
Whitinsville, Mass.
mahern@association.org
Age: 39

PRIMARY RESPONSIBILITIES: Ahern maintains all Internet services, develops the World Wide Web site and works on CD-ROM and multimedia projects for EAW, a privately held company that manufacturers speakers used in rock 'n' roll touring environments, stadiums, arenas and other venues.

AREAS OF EXPERTISE: Interactive/multimedia; Macintosh webmastering; community building.

PRIOR EXPERIENCE: Ahern ran a small advertising agency, of which EAW was a major client. He has a degree in philosophy and was a disc jockey and a board member for community radio and television stations. "I consider myself neither high-tech nor low-tech," be says. "I'm a medium-tech person. I feel like the technology has come down to me."

UPSIDE: Staying up to speed with the new technologies. Creatively solving problems. Controlling his own learning curve and career path.

DOWNSIDE: Not having the budget to develop more extranet-type functions.

BIGGEST CHALLENGE: Keeping everything in balance. Learning new technologies. Motivating staff. Keeping interns and assistants.

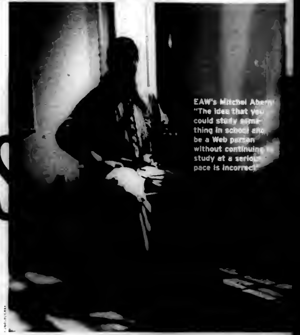
WEB SKILLS USED REGULARLY: Database integration. Server and site management software. Graphics programs. Digital video camera and editing systems.

HOW SKILLS WERE ACQUIRED: Mostly self-taught — on the job and on weekends. "Everything I knew from two or three years ago when

Web walkers, page 82

THE NEW WEB WALKERS

By Natalie Engler



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Web walkers, page 82

THE NEW WEB WALKERS

CONTINUED FROM PAGE 81

I started with this is obsolete or has been built on," he says. "The idea that you could study something in school and be a Web person without continuing to study at a serious pace is incorrect."

ADVANCEMENT POTENTIAL: "These guys would like me to stay here forever, and maybe I will," he says. "On the other hand, I get hit with offers on a somewhat regular basis."

ADVICE: "The Internet is still a very young industry," Ahern says. "Take a couple of quick courses and find yourself an opportunity where you can work in the field. It doesn't take long to build yourself into a functional level."

MARK LIPHARDT
Senior technical executive
Network Commerce Services division, AT&T,
Los Angeles
mliphardt@association.org
Age: 44

PRIMARY RESPONSIBILITIES: Liphardt manages the developer channel for the Western U.S., a program that tracks Web developers to help build Web sites with AT&T's customers. "My role has often been the liaison between the technical and business side, helping them decide what to do and what is possible in any given period," he says.

AREAS OF EXPERTISE: Data and voice communications; Internet Protocol technologies and future directions; implementing electronic-commerce systems; developing online communities; security systems; understanding how businesses operate.

PRIOR EXPERIENCE: Independent consultant for 10 years doing systems design, strategic planning and software development.

UPSIDE: "I have a lot of influence on how we're doing things in our organization," he says.

DOWNSIDE: "I can't always make things happen at the speed of thought." But seriously, "there are pluses and minuses to working for a very large organization. That might be one of the things that makes it a challenge. But I like challenge. That's what drives me."

MARK LIPHARDT

BIGGEST CHALLENGE: Keeping "everyone's interest in balance with what is possible at any given time and coming up with solutions," Liphardt says.

WEB SKILLS USED REGULARLY: Web hosting, streaming technologies and database integration.

HOW SKILLS WERE ACQUIRED: Many years of study. Self-teaching. Industry training. Networking training. Novell Certified NetWare Engineer. Cisco classes for routing. AT&T classes in communications protocols. Trade shows, seminars and events such as Comdex, Internet World (where Liphardt speaks) and other local networking shows.

ADVANCEMENT POTENTIAL: "I can continue to grow within AT&T in the IP technology space," he says. At the same time, "I always keep my eyes open to what's going on out there." Liphardt says he may consider an "executive position at a start-up company with some novel technology and a good idea."

ADVICE: Network with peers. Go to trade shows. Keep up with the latest advances in Hypertext Markup Language, Java and database integration. Good project management skills are also very much in demand. "It helps to be able to see the big picture from a systems analysis standpoint and communicate that to the designers and to management, so the final result is what everyone wanted to happen," he says.

BOB LAVORGNA
Director of electronic commerce
The Hartford Technology Service Co., a business division of The Hartford Financial Services Group, Inc., Hartford, Conn.
Age: 40

PRIMARY RESPONSIBILITIES: Lavorgna works for an internal/external consulting firm within The Hartford, one of the first insurance companies on the Web. He oversees the electronic-commerce suite, which includes Internet and intranet development and production support, E-mail, collaborative applications, as well as electronic file transfers, electronic fund transfers and electronic data interchange.

Lavorgna also makes sure The Service Co.'s solutions are competitive with those offered by external consulting companies. He spends time marketing, costing and pricing. A typical week involves "a fair amount of interaction with the customer base, talking about what the technologies can do for their business," he says.

PRIOR EXPERIENCE: Lavorgna has been on the technical side in The Hartford's IT organization for more than 17 years. He started out as a programmer, working on midtier and PC applications. He then managed support for those environments and moved into telecommunications and was responsible for network design and installation. Next, he set standards for the company. All of those experiences, he says, prepared him to take on electronic commerce.

UPSIDE: "The technology is very exciting [as is] the ability to satisfy customers quickly and see the bottom-line results." So is the "entrepreneurial spirit" of the internal consulting model.

DOWNSIDE: Staying on top of technology because it's such a fast-changing environment.

BOB LAVORGNA

A SATISFYING PROJECT: An electronic-commerce application that lets insurance agents and employees in the field download forms needed to complete a sale around the clock. The project integrates Lotus Notes, the Web, faxing and E-mail and was written in less than a month. "We've been able to secure sales during off-hours because the forms were available immediately online, instead of having them be mailed from one location to another," he says. The project reduced the printing and processing costs.

WEB SKILLS USED MOST OFTEN: "Looking at the business problem and the ways we can solve it through applications we have built or can build."

ADVANCEMENT POTENTIAL: Lavorgna could go into technical management or the business environment. "There are a lot of different avenues one could take," he says. "More and more companies have electronic commerce in the business as opposed to as an IT function."

ADVANCEMENT STRATEGY: "I don't plan my career in certain steps. I make sure I'm ready for opportunities as they arise."

ADVICE: To head up electronic commerce, "you have to truly understand the business," he says. Lavorgna also recommends the Society for Information Management's Regional Learning Forums. "It gives you a tremendous ability to understand your strengths and weaknesses, [as well as] a holistic look at your career. The topics vary from how do people learn — and how do you learn — to mentoring and coaching and listening."□

Engler is a freelance writer in Arlington, Mass.

THE HOTTEST WEB JOBS

According to a survey by Cromwell Foote Partners LLC, the highest-paid Internet/intranet positions are:

CORPORATE/GOVERNMENT SECTOR

JOB TITLE	SALARY*
Director of Web systems	$111,146
Internet/intranet project manager	$96,969
Content/marketing webmaster	$92,644
Web architect	$89,922
Technical webmaster	$87,031
Web security manager**	$80,789
Web engineer	$73,953
Web developer/programmer	$67,577
Web systems administrator	$63,615

*National average **Gaining in pay and prestige

THE HIGH-TECH INDUSTRY

According to a survey by the American Electronics Association, these five Web positions rank highest in average salary:

Internet strategist	$121,200
Electronic-commerce manager	$120,100
Internet strategy director	$114,700
Server engineer	$88,700
Web technologist	$78,800

Source: Cromwell Foote Partners LLC, 1998. All rights reserved.

Resources

Association of Internet Professionals
Largest Internet professional trade association
www.association.org

Hot Jobs, Inc.
Internet recruiting site
www.hotjobs.com

The Computer Jobs Store
Technical jobs and career information
www.computerjobs.com

Society for Information Management
Regional Learning Forums
www.simnet.org/rlfweb/index.htm

Senior Computer Consultant/Programmer Analyst. Chicago. Analyze, plan, develop, test and implement business systems software applications for clients in a variety of industries. In developing technical solutions, use the following computer methodologies. UNIX, Windows, NT Servers, ORACLE, C, SYBASE, MS-SQL SERVER, VISUAL BASIC, GAP Analysis. Implement, customize and extend enterprise-wide business and financial systems software packages using client server technology. Serve as technical mentor for less experienced consultants. Provide code walk through, as well as design unit, integration and systems testing leadership. Consult with clients regarding specific software needs. Prepare documentation for developed software. Assist in transition to end user. Large percentage of time may be spent performing consulting services at client sites in various locations throughout the United States. 40 hours a week. 8:00am to 5:00pm. Annual salary $56,650.00. Qualified applicant must have Bachelor's degree in Computer Science or Related Field, which may include Engineering, Math, Physics or Business and four years of experience in the job offered or four years of related experience as Computer Software Development Specialist, which may include Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Computer Consultant. Through education or work experience must have completed at least one software development project involving such of the following computer-based methodologies. 1) UNIX, 2) Windows NT Servers, 3) RDBMS such as ORACLE, SYBASE or MS-SQL SERVER, 4) VISUAL BASIC, 5) Implementation of enterprise-wide business or financial systems software package using client server technology. Must have proof of legal authority to work permanently in the US. Send two copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605. Attention: Bert Grunnet. Reference #V-IL 19674-P. An Employer Paid Ad.

Consultant: Consult with client companies at their site to determine needs. Design, develop, adapt, install & debut computer systems (hardware &/or software) as per needs of clients. Analyze & assist in implementation of new systems & troubleshoot any problems. Develop new system specification, flow charts, manuals & train clients' employees in use of systems. May use hardware, languages & tools such as IBM3090: MVS/XA: TSO; DB2; VS COBOL II, CICS, JCL & QMF. 40 hour work week, 9am to 5pm. Salary: $64,000 per yr. Requires Bachelor degree in Comp Sci or Comp Eng and 2 years experience in job offered or 2 years experience as Programmer / Analyst. Experience to include use of hardware, languages & tools listed above. Must have proof of legal authority to work permanently in the U.S. SEND 2 COPIES OF BOTH RESUME & COVER LETTER to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-3 South, Chicago, Illinois 60605. Attention: Leila Jackson, Reference #V-IL 18596-J. NO CALLS. AN EMPLOYER PAID AD.

Systems analyst (multiple positions) (Variable job sites throughout Metro Chicago) Performance of customer specific, system development & client/server networking connectivity (mainframe to LAN, LAN to LAN, LAN to PC & PC to mainframe) within NOVELL & UNIX environments. Development of TOKEN RING & ETHERNET interfaces with IBM mainframes. $50,000/yr. 40 hrs/wk, Mon - Fri 8am to 5pm. REQD: Bachelor's in Comp. Sci., Comp. Eng., M.I.S. Math or Bus. and 2 yrs. exp. in job offered. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, IL 60605, Attn: Bert Grunnet, Ref # V-IL 19253-P. AN EMPLOYER PAID AD. NO CALLS.

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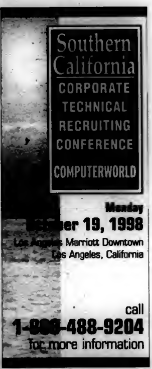
Chief Computer Programmer. Duties: Manage the reconfiguration of complex computer systems. Write programs using COBOL and VisualBasic. Prepare detailed plans to implement computer conversions for data compliance. Perform assessment of non-compliant software and databases. Work with customer users to identify application's current operational procedures. Program functions and known flaws. Plan daily work schedule in coordination with conversion support team. Monitor progress of system conversion. Supervise a team of programmers and monitor progress. Assign, coordinate and review work of programmers. Resolve problems and control entry of work into compliance process. Resp. for systems development, implementation of user specs and changes, and system testing for multi-operating systems and large databases incl. HPUX and MPE/IX. Direct revision of existing programs to meet requirements. Perform network maintenance including troubleshooting, new design and network support functions. Train subordinates in programming and program coding. Requires: M.S. (will accept B.S. & 5 yrs. progressive exp.) in Comp. or Info. Science, Econ. or related field & 5 yrs. exp. in the job offered or 5 yrs. exp. as a Systems Analyst or Programmer. Exp., which may have been obtained concurrently, must incl. 5 yrs. exp. writing programs using COBOL and VisualBasic & 5 yrs. exp. in MPE/IX operating systems. EOE 40 hrs/wk: 8:00 a.m. to 5:00p.m. Salary: $65,000/yr. Send resume (no calls) to: Monica Blue, CTG, Inc., 200 Public Square, E372-D, Cleveland, OH 44114.



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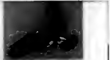

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Software Engineer: Develops and creates database integrated information systems for performing on-line and batch transactions using structured system analysis and logical/physical design utilizing data and process modeling by creating various modules and subsystems which are installed on an IBM 3090 mainframe computer system. Performs system engineering & testing using CASE tools including ADW in a CICS, DB2, VSAM, IDMS/R, ADS/O and COBOL II environment to insure system compatibility of the newly created modules. Requires M.S. degree in Computer Science. Also requires two years experience in the job to be performed. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $65,000.00 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume and cover letter to: Illinois Department of Employment Security, 401 S. State Street - 7 North, Chicago, IL 60605, Attention: Lela Jackson, Reference #V-IL 18478-J, AN EMPLOYER PAID AD. NO CALLS.

Software Engineer - Design and troubleshoot multiple internal processing interfaces in UNIX operating systems using C++, PRO*C, PL/SQL, SQL*Plus, SQL*Net & TCP/IP socket network programming. Porting subsystems from SunOS 4.x/Oracle 6 to Solaris 2.x/Oracle 7 environment. Complete design documentation and functional specifications for user. M-F, 40 hrs, 8:30-5, $61,000/yr. Requirements - Master's degree in computer science or electrical engineering and one year's experience in the job offered or one year's experience in the related occupation of Computer Programmer-Analyst. Special requirements - One year's work experience with: Pro*C, PL/SQL, Oracle and TCP/IP socket network programming. Located in Downers Grove, IL. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume and cover letter to: Illinois Department of Employment Security, 401 S. State St., 7 North, Chicago, IL 60605 Att: Janet Aschenbrenner. Ref #V-IL 19419-A. No calls. An employer paid ad.

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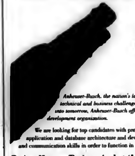

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Project Manager/Business Analyst (Job Code: PM)

Position will be responsible for the analysis of business situations and the design of enterprise systems on time and within budget, using a standard system delivery methodology. In addition, you will provide leadership in one of the following areas: Data Warehousing, Client/Server/WEB Development, Release Planning, Systems Quality Assurance, Configuration Management.

Qualifications include three to seven years' experience using a full life-cycle system delivery methodology, three to seven years' experience managing information systems projects, and a minimum of a bachelor's degree in Management Information Systems or related (MBA preferred).

Distributed Applications Analyst/Architect (Job Code: DA)

Position will provide technical leadership defining and implementing applications architecture in a distributed, web-based environment. You will also apply a standard system development lifecycle methodology to develop, track, acquire, and install technology projects.

Qualifications include one year experience in a multi-tier WEB development with Microsoft based products (IIS, MTS, COM), five years' experience using a full lifecycle system delivery methodology, along with experience in data modeling, CASE tools, and object oriented methodologies. A minimum of a Bachelor's degree in Management Information Systems a must.

Data Warehousing Analyst/Architect (Job Code: DW)

Position will be responsible for a full lifecycle implementation of data warehouse projects, and modeling data warehouse feeds into DSS tools. You will also apply a standard system development lifecycle methodology.

Oracle, ROLAP/MOLAP, data modeling, data modeling tools (Cool:Gen), Unix, C skills are preferred. A minimum of a bachelor's degree in Management Information Systems (or related) is required, along with a minimum of seven years' IT experience, with the last two in data warehousing.

Client/Server Developers (Job Code: CSD)

Position will define and develop applications components in a client/server/web-based environment, and apply a standard system development methodology.

Skills should include: Object Oriented Analysis, Design and Development, C, Visual Basic, Web-based development, Oracle DBMS. Experience using automated data and process modeling tools is required; Component/Cool:Gen preferred. Minimum of a bachelor's degree in Management Information Systems or related is required.

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IT employers that want to lure H1-B talent can take lessons from the country's largest H1-B hiring market

ATLANTIC CITY CONVENTION & VISITOR AUTHORITY

FOREIGN AFFAIRS

By Jill Vitiello

As the information systems shops of corporate America scramble to meet the unwavering year 2000 deadline, more firms than ever are angling to hire foreign IS professionals. Cobol programmers, the mainstay of year 2000 conversions, are plentiful in Russia, Israel and India, where mainframe technology still rules.

"They are willing to work on those systems here in the U.S., and it's a great way for them to break in to this market," says David Sears, president of D. L. Sears & Associates, Inc., an information technology consulting firm in Morris Plains; N.J. All they need are H-1B visas, which are in short supply.

The H-1B visa lets foreign professionals work in the U.S. for a certain length of time; the U.S. grants only 65,000 H-1B visas per fiscal year. In fiscal 1998, the cap was reached by May, mostly by firms filling IT positions. Despite some wrangling in the House and Senate this summer, Congress has not raised the cap, and isn't expected to revisit the matter any time soon, according to Irving Spitzberg, president of The Knowledge Co. in Fairfax, Va., an organization that evaluates the educational and professional experience of foreign nationals for prospective employers and for the federal government.

So who's been hogging all the H-1B visas? Pennsylvania and New Jersey, according to The Immigration and Naturalization Service. A report issued by the agency earlier this year showed that the firms that sponsored the most foreign high-tech workers from October 1997 to March 1998 were located in Pennsylvania, which ranked No. 1 with 1,217 visas, and New Jersey, which ranked No. 2 with 1,080 visas.

For each foreign IS professional they sponsor, employers can expect to pay $2,500 or more in legal and other fees, according to Amy Naples, director of human resources at Bluestone Software, Inc. in Mount Laurel, N.J.

In Philadelphia, PricewaterhouseCoopers has more than 20 IS professionals overseas waiting for the H-1B visa cap to be lifted on Oct. 1. They'll join the company's SAP consulting practice in cities nationwide, according to Lori Desiderio, recruiting manager for the Big Five firm. ☐

Vitiello is a freelance writer in East Brunswick, N.J.

TOP IT SKILLS

IT hiring managers have the following to say about demand for certain IT professionals:

IT SKILLS	PHILLY	SOUTHERN N.J.
Cobol programmers	Send more!	So many legacy systems
C++ programmers	Hot	Hot
Unix experts	Hot	Hot
SAP developers	Hungry for more	Almost enough
Web developers	Hot	Hot
NT networking experts	Hot	Certified MCSEs, please!
Certified Novell engineers	Glad to see you!	Cooling off

Source: I TeamTalent; PricewaterhouseCoopers

Tips for tapping the foreign IT talent pool

1. **Find a law firm with experience in completing H-1B visa paperwork. Negotiate for a volume discount.**
2. **Send in-house recruiters abroad. Station them around the globe or dispatch delegations periodically.**
3. **Establish a business relationship with international IT recruiting firms.**
4. **Create a process for helping foreign workers find housing, get a car or learn the transportation systems.**
5. **If possible, match U.S. newcomers with mentors from their own countries to help them become acclimated to American life.**
6. **Review workplace policies to help foreign nationals understand expectations for conduct in corporate settings.**
7. **Be aware of cultural differences and ask questions when a communications gap arises. For example, one recruiter thought a candidate from India was disagreeing with everything she said because he shook his head. In India, however, that gesture indicates agreement.**
8. **Invite foreign workers to share information about their cultures. Do it informally, over a brown-bag lunch or at a local restaurant, but be sensitive to dietary restrictions when choosing the eatery.**

Sources: Bluestone Software, Inc., PricewaterhouseCoopers; Deena Levine, cross-cultural consultant, Alamo, Calif

Casino technology

IT in the cards?

Although several Fortune 500 companies are settled in lush campuses in northern New Jersey, southern New Jersey is known more for its resort communities. None is more prosperous than Atlantic City, where legalized gambling takes place at the 12 casinos that line the famous boardwalk. In the tight-knit information technology community there, chief information officers and information systems directors meet monthly for breakfast, with the various properties taking turns hosting the event.

"We share solutions and ideas at a high level in a spirit of cooperation," says Art Lucchesi, vice president of IT at the Claridge Casino Hotel. "In the details, however, we're still competitors."

License required: All casino employees, including IT professionals, are subject to strict regulations that ensure the fairness of play at the gambling emporiums. For example, programmers may need gaming licenses because the work they perform involves confidential information. For the most part, IT opportunities are limited to those who have experience with casino and/or hotel applications.

Computer convention: Training for a variety of casino jobs is available at Atlantic Community College, according to Kathy Corbalis, executive director of college relations. The college offers many courses online to accommodate the erratic schedules of casino employees, whose shifts frequently change over the course of a traditional semester.

— Jill Vitiello

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CHI has begun to execute its enterprise IT strategy and now has the following open positions in our Eastern Region IT Division:

• *Director, Technology Services:*
Executive to direct region-wide technology functions, including desktop, server, voice, data, image, processing systems and data center operations; leads team of 35; requires at least 7 years in IS management in fast-growth, multi-location organization; must be technology strategist with operations experience.

• *Director, Application Development:*
Healthcare technology executive with 7+ years in IS management to direct region-wide application systems (including clinical, financial, administrative, managed care and decision support); leads team of 25; must be strategist with strong project management skills; experience in managed care preferred.

• *Decision Support Clinical Analyst:*
Assists in the design, implementation, and maintenance of the TSI Transition for Quality System. Works closely with Hospital clinical and management staff in utilizing decision support systems to develop and manage clinical pathways and integrate patient review activities. TSI TQ experience desired.

• *Decision Support Clinical Analyst:*
Participates in the implementation of decision support systems that will support the clinical needs of MBO's and regional entities, assist in the development of clinical modules work plans; coordinates project tasks with minimal direction. TSI T2 experience desired.

• *Technology Analyst:*
Candidate with breadth and depth — desktop, servers, core and edge — to work with new technologies design and implementation team. This group focuses on innovative solutions in a dynamic, distributed health care setting. Challenge yourself and your peers.

• *Systems Analyst:*
A programmer with 2 or more years experience with Visual Basic and/or Visual C++ to develop and support system integration projects using integration engine and desktop scripting tools. Experience with hospital information systems, system and/or database administration, and client server programming a plus.

• *Desktop/Network Analyst:*
Implement and support desktop solutions in a Windows 95 and NT environment. Need MS skills, and Netware, IP, Thin Client experience.

• *Applications/System Analyst:*
Initially, the analyst(s) will be part of the Y2K project team. In this role the Application Analyst will coordinate the remediation and testing of clinical applications. The Systems Analyst will be responsible for creating hardware and software test environments. Subsequent to Y2K activities the analyst(s) will lead future strategic initiatives. Strong project management skills and implementation experience preferred. Must be able to work independently and demonstrate initiative.

• *Financial Analyst:*
Responsible for analyzing, developing, implementing and supporting technical solutions to users of healthcare applications ranging from general financials to supply chain. Analyst works with vendors, users, and other IS teams to deliver the most effective and efficient solutions.

• *System Analyst (NT/Citrix Administrator):*
We seek an individual to be responsible for NT/Citrix administration and provide support to Citrix application accessed via WAN, LAN and remote modem dial-up. Additionally, the position also provides technical consulting support to Application Development project staff. A minimum of 1-2 years of hands-on NT/Citrix administration experience in an information systems environment required.

• *System Analyst (Database Analyst):*
This opportunity is responsible for OracleNT database administration and support. Duties will include user account maintenance, troubleshooting user problems, monitor/maintain/tune database, maintain/update system and database backup procedures. Special projects may include creation of PC-based relational database applications. Our requirements include experience with database design, system upgrades, OracleNT version 7.x or higher and NT administration skills. MS Access, Visual Basic, C++ and SQL Server knowledge would be a plus.

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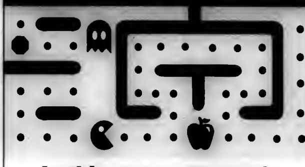

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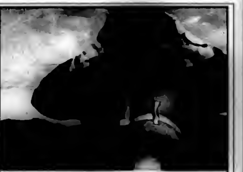

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High Tech/High Touch: Creating the Recruiting Office of the Future
Sue Keever, The Keever Group

10:00am Sponsor Showcase/Coffee Break

10:30am General Session:
Strategic Staffing in a Competitive Environment
Carlos Echalar, Litton PRC

12:00pm Luncheon Keynote:
Paul Gillin,
Editor, Computerworld

1:30pm Town Hall Forum
Moderator Gary Cluff, Cluff & Associates

3:00pm Sponsor Showcase/Coffee Break

3:30pm Concurrent Sessions repeat:
Building an Internet Recruitment Strategy
Tracey Claybrooke,
Claybrooke & Associates

Retaining the Best: Practical Retention Strategies that Work
Barbara Mitchell, The Mitchell Group

High Tech/High Touch: Creating the Recruiting Office of the Future
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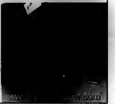

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Qwest Communications Int'l Inc.	27.6	Cayenne Software Inc.	-25.0
Informix Corp.	26.6	SAP AG	-20.1
Progress Software Corp.	26.0	Storage Technology (L)	-18.9
Meridian Data Inc.	25.9	Phoenix Technologies (L)	-17.8
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Microsoft rules, for now

Last Monday, Microsoft Corp. (Nasdaq:MSFT) became the most valuable company in the U.S., surpassing longtime titleholder General Electric Co. (NYSE:GE), a company known for goods from lightbulbs to jet engines.

Some say the nation's financial outlook is going to be affected because a software company, not a general consumer company, is the most valued. "Software is driving the economy," says Capers Jones, chairman of Burlington, Mass.-based Software Productivity Research, Inc.

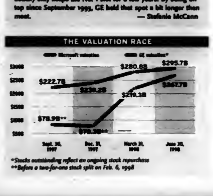
But others disagree. "The fact that [Microsoft's valuation] is driving the stock market doesn't mean it's driving the economy," says David Wyss, chief economist at Standard & Poor's DRI in Lexington, Mass. "How many jobs does it create when someone buys a copy of Windows 98?"

Microsoft spent the summer chasing GE for the No. 1 spot. In July, each company's stock value exceeded $300 billion, putting both well ahead of the pack. But the software vendor eventually came out on top.

To compute a company's valuation, take the number of outstanding shares and multiply it by the company's stock price. As of Tuesday, the calculation looked like this: General Electric had 3.254 billion shares outstanding, closing at 78-1/16, thus bringing the company's worth to $254 billion. Microsoft closed at 108-5/16 and had 2.464 billion shares outstanding, which raised its value to $267 billion.

Microsoft may be in the catbird seat, but Wall Street analysts don't believe the Redmond, Wash.-based software company will stay there for long. According to Jones, a company usually only keeps the No. 1 slot for a few years. By being on top since September 1995, GE held that spot a bit longer than most. — Stefanie McCann

THE VALUATION RACE



*Stocks outstanding reflect an ongoing stock repurchase

**Before a two-for-one stock split on Feb. 6, 1998

Exch	52-Week	Range		Sept 18 2 pm	Wk Net change	Wk Pct change
[illegible]						
COMS	38.75	22.50	3Com Corp	30.18	2.19	7.8
AIT	52.11	38.11	Ameritech Corp	49.08	3.19	6.9
ASND	55.08	22.00	Ascend Communications	46.61	1.88	4.2
T	68.50	43.00	AT&T	59.56	4.19	7.6
BNYN	11.38	2.11	Banyan Systems Inc	1.69	-0.06	-3.5
BEL	53.00	37.38	Bell Atlantic Corp	44.81	1.56	3.6
BLS	77.63	45.00	BellSouth Corp	71.75	4.13	6.1
BRKT	22.75	9.38	Brooktrout Technology	13.88	2.19	18.1
CS	16.75	6.88	Cabletron Systems	9.88	1.75	21.5
CGRM	21.88	9.13	Centigram Communications	9.75	0.75	7.0
CSCO	70.25	30.38	Cisco Systems Inc (H)	68.56	0.52	0.8
CMNT	4.88	1.38	Computer Network Tech	3.69	0.38	10.7
CNCX	41.00	7.88	Concentric Network Corp	17.88	1.75	10.9
FORE	33.00	10.25	FORE Systems Inc	19.50	-0.94	-4.5
GDC	7.25	2.88	General Datacomm Inds	3.13	0.25	8.2
GSX	47.25	15.38	General Signal Networks (L)	15.81	0.38	1.4
GTE	64.38	40.50	GTE Corp	53.31	1.00	6.2
LU	108.38	36.19	Lucent Tech	73.81	-3.19	-4.2
MADGF	8.75	2.81	Madge Networks NV	3.13	0.25	8.7
WCOM	57.87	28.50	MCI WorldCom	44.38	0.41	-0.9
NETM	5.35	2.94	NetManage Inc (L)	1.00	-0.08	3.9
NTRX	4.00	0.63	Netrix Corp	1.63	0.25	18.2
NCDI	11.75	5.00	Network Computing Devices	6.38	0.75	4.0
NWK	36.63	9.75	Network Equipment Tech	11.38	0.81	7.1
NN	69.38	18.00	Newbridge Networks Corp	18.69	-0.90	-4.5
NT	68.25	19.88	Northern Telecom Ltd (L)	40.19	-6.25	-13.5
NOVL	13.63	6.81	Novell Inc	12.41	0.91	7.9
ODSI	54.00	1.13	Optical Data Systems Inc (L)	1.25	-0.38	-50.3
PCTL	13.25	3.38	PictureTel Corp	5.94	0.08	1.6
OPEN	3.88	0.38	Proteon Inc	0.88	0.00	0.0
RACO	4.13	1.38	Racotek Inc	2.00	0.13	5.9
RADS	29.38	3.81	Radiant Systems Inc (L)	4.69	-0.44	-8.5
VRTL	10.15	1.88	Vertel	2.75	0.08	2.7
SBC	50.56	38.19	SBC Communications	41.08	2.38	6.1
SFA	27.94	14.00	Scientific Atlanta Inc	18.88	0.19	1.0
SHVA	14.69	5.88	Shiva Corp	3.91	-0.03	-0.8
FON	75.63	47.00	Sprint Corp	72.25	4.31	6.5
QWST	47.00	22.00	Qwest Communications Int'l Inc	33.19	7.19	27.6
SMSC	18.13	5.25	Standard Microsystems Corp	6.50	-0.38	-8.8
USW	58.00	38.88	U S West Inc	52.19	1.69	3.5
XIRC	27.75	8.63	Xircom	24.00	1.88	8.5
XYLN	34.31	10.44	Xylan Corp (L)	10.44	-5.75	-35.5
[illegible]						
AAPL	40.75	12.75	Apple Computer Inc	36.38	1.31	3.5
CPQ	38.75	23.13	Compaq Computer Corp	30.69	0.81	2.6
DELL	40.03	17.00	Dell Computer Corp	58.44	2.00	3.5
GTW	68.75	35.00	Gateway 2000 Inc	52.44	3.60	6.9
HWP	82.38	47.75	Hewlett Packard Co	50.88	1.63	3.3
MUEI	20.75	8.44	Micron Electronics Inc	14.51	-0.44	-3.0
NIPNY	63.00	35.00	NEC America (L)	35.44	1.00	2.9
SGI	20.38	9.00	Silicon Graphics	10.11	0.31	2.9
SUNW	52.50	30.38	Sun Microsystems Inc	46.00	0.38	0.8
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DGN	31.75	7.00	Data General Corp	10.81	1.44	15.3
IBM	130.13	88.63	IBM	125.63	1.75	1.4
MDCD	6.63	1.38	Meridian Data Inc	2.13	0.44	25.9
NCR	38.50	23.63	NCR Corp (L)	24.75	-0.38	-0.3
PRCM	18.44	1.56	ProCom Technology Inc	5.00	0.25	5.3
SQNT	27.38	5.75	Sequent Computer Sys.	9.13	2.19	31.5
TEXM	0.88	2.50	Texas Micro Inc	2.88	0.25	9.5
SRA	37.00	25.44	Stratus Computer Inc	31.69	1.13	1.5
UIS	30.88	11.00	Unisys Corp	23.25	0.69	3.0
[illegible]						
ADBE	63.13	23.63	Adobe Systems Inc	31.50	3.81	13.8
AMSWA	15.63	2.56	American Software Inc	2.81	0.06	2.3
APLX	10.25	2.00	Applix Inc	2.44	0.00	0.0
ARDT	15.00	6.63	Ardent Software	11.00	0.41	4.0
ARSC	36.38	19.25	Arbor Corp	25.13	1.25	5.2
ADSK	51.13	22.25	Autodesk Inc	30.94	-0.25	-0.8
BMCS	58.00	27.38	BMC Software Inc	52.75	3.00	6.0
BOOL	26.00	17.13	Boole and Babbage	23.94	1.88	7.8
BOBJY	40.00	8.75	Business Objects	13.06	2.69	25.9
CAYN	5.50	0.19	Cayenne Software Inc	0.39	-0.08	-25.0
CNTB	1.88	0.60	Centura Software	1.13	-0.06	5.3
CHKPF	48.00	19.88	Checkpoint Software Tech. Ltd	18.00	0.88	4.8
COGNF	34.25	18.69	Cognos Inc	18.25	-0.75	-3.9
CA	61.94	26.00	Computer Associates	[illegible]	5.81	0.1
CPWR	80.11	27.63	Compuware Corp	57.00	2.31	4.2
CSRE	9.81	2.38	Comshare Inc.	3.63	2.00	56.2
COSFF	8.25	1.00	Corel Corp	2.13	0.75	54.5
DWTI	9.88	2.00	Dataware Technologies Inc	2.38	0.88	12.1
DCTM	59.63	20.00	Documentum, Inc	43.00	2.00	5.0
FILE	38.88	7.00	FileNet Corp	16.81	0.03	0.2
FRTE	15.00	2.50	Forte Software	5.38	-0.06	1.0
GPSI	42.38	16.38	Great Plains Software Inc (H)	37.38	0.00	0.0
HUMCF	34.25	18.00	Hummingbird Comm. Ltd	19.00	0.00	2.7
HYSL	63.25	19.75	Hyperion Solutions Corp (L)	23.81	-2.88	-10.8
IRIC	40.00	9.75	Information Resources	12.75	2.08	19.3
IFMX	00.88	9.00	Informix Corp	5.00	1.00	26.6
INPR	52.19	4.50	Inprise Corp (L)	5.22	-0.22	-4.0
INGR	14.38	3.88	Intergraph Corp	9.00	0.75	4.1
LEAF	4.00	0.75	Interleaf Inc	1.03	-0.13	-10.8
ISLI	21.25	10.63	Intersolv Inc	11.69	-0.31	-2.6
INTU	67.94	25.63	Intuit Inc	39.00	2.38	5.7
JDEC	46.25	24.88	J.D. Edwards Co.	42.50	0.69	1.6
TLC	32.81	11.00	Learning Co. (The)	23.25	0.94	4.6
MANU	30.38	9.63	Manugistics Group, Inc	12.06	2.00	19.8
MAPS	16.25	8.38	MapInfo Corp	11.13	0.19	1.7
MATH	4.87	1.75	MathSoft	2.50	0.31	14.3
MENT	13.00	6.75	Mentor Graphics	7.22	-0.47	-6.1
MIFGY	30.63	13.25	Micro Focus (L)	22.25	1.63	6.8
MGXI	14.88	6.00	Micrografx Inc	9.13	0.00	0.0
MSFT	119.63	59.06	Microsoft Corp	104.63	1.31	1.3
OBJS	5.25	1.69	ObjectShare, Inc.	1.06	-0.09	-7.9
OMTL	15.00	3.50	Omtool Ltd (L)	2.63	-0.13	-4.5
ORCL	29.13	11.75	Oracle Corp	27.00	1.81	7.2
PMTC	48.31	9.88	Parametric Technology	18.25	-0.90	-4.7
PSFT	57.88	18.88	PeopleSoft	31.31	1.44	4.6
PTEC	40.38	6.06	Phoenix Technologies (L)	6.06	-1.31	-17.8
PSQL	27.25	7.63	Platinum Software	8.63	-4.88	-36.1
PLAT	34.13	16.75	Platinum Technology (L)	17.88	-2.13	-10.6
PRGS	40.13	12.63	Progress Software Corp	24.56	5.06	26.0
RNBO	36.13	13.44	Rainbow Technologies Inc	15.13	1.88	14.4
REDB	10.13	1.88	Red Brick Systems Inc	2.75	-0.08	-2.7
ROSS	5.88	2.00	Ross Systems, Inc.	2.00	0.19	0.7
SAP	80.13	28.94	SAP AG	38.90	-9.81	-20.1
SCOC	6.88	2.00	SCO Inc.	3.00	0.38	16.3
SDTI	42.75	9.00	Security Dynamics Tech.	10.81	-1.06	-8.9
SSW	32.81	16.25	Sterling Software Inc	22.63	0.63	2.8
SDRC	20.00	8.75	Struct. Dynamics Research	12.13	2.94	32.0
SYBS	23.63	3.56	Sybase Inc.	5.88	-0.41	-6.5
SYMC	32.06	12.75	Symantec Corp (L)	13.81	-2.25	-14.0
SNPS	47.13	24.00	Synopsys	33.98	2.63	8.5
SSAX	18.63	1.44	System Software Assoc	5.88	0.41	8.7
SYSF	10.75	0.88	Systemsoft Corp	0.61	-0.08	15.0
BAANF	55.00	18.25	The Baan Co	28.23	1.88	-6.2
TRUV	8.19	0.75	Truevision Corp	1.00	0.06	5.6
VIAS	56.88	9.25	Viasoft Inc	7.38	0.09	1.1
VSIO	50.88	19.00	Visio Corp	25.19	1.19	1.6
WALK	26.44	5.25	Walker Interactive Systems	1.75	0.13	1.9
WALL	27.00	10.13	Wall Data Inc	13.38	2.44	22.0
WANG	32.25	18.25	Wang Laboratories Inc	19.38	-0.38	-1.9
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AMZN	147.00	18.69	Amazon.com	80.00	3.75	4.5
AOL	140.50	12.00	America On Line	90.75	5.88	6.7
ATHM	57.25	18.00	At Home Corp	11.15	1.00	11.6
EDFY	40.13	8.88	Edify Corp	6.59	1.00	19.9
XCIT	35.50	8.94	Excite Inc	38.38	0.00	0.2
SEEK	45.00	7.13	Infoseek Corp	20.61	0.94	4.8
LCOS	51.63	9.81	Lycos Inc	24.81	-0.08	-0.3
NSCP	40.50	14.88	Netscape Comm. Corp	22.19	0.81	1.9
NSOL	38.00	11.75	Network Solution Inc	15.63	1.38	11.0
OMKT	40.13	8.50	Open Market Inc	10.38	-0.25	-2.4
PEGS	21.00	10.75	Pegasus Systems (L)	12.50	-5.13	-29.1
PSIX	21.94	4.25	PSINet	13.69	0.19	1.4
QDEK	1.88	0.25	Quarterdeck Corp	0.41	0.03	8.3
SCUR	15.25	8.25	Secure Computing Corp	8.50	0.19	2.2
SPYG	15.00	4.00	SpyGlass Inc	12.15	0.06	0.5
YHOO	108.75	17.13	Yahoo! Inc	91.00	11.81	14.9
[illegible]						
AMD	34.00	12.75	Advanced Micro Devices	17.81	0.69	4.6
ADI	39.63	12.94	Analog Devices Inc	18.94	0.38	3.5
CRUS	17.75	8.00	Cirrus Logic	7.88	0.47	6.1
CY	18.94	7.88	Cypress Semiconductor Corp	8.75	0.44	5.3
INTC	99.25	65.88	Intel Corp	82.38	1.19	1.4
LSCC	74.88	24.00	Lattice Semiconductor	34.72	1.91	7.2
LSI	31.75	11.88	LSI Logic Corp	12.69	0.94	8.0
MCRL	60.88	21.50	Micrel Semiconductor Inc	38.66	0.78	2.7
MU	41.94	16.00	Micron Technology	35.94	2.38	8.6
MOT	75.19	38.00	Motorola Inc	50.63	5.50	11.4
NSM	47.88	8.00	National Semiconductor (L)	9.38	0.13	1.4
RMBS	67.75	25.38	Rambus Inc	51.00	0.38	0.7
TXN	71.25	39.63	Texas Instruments	53.00	2.19	4.2
VLSI	30.88	7.00	VLSI Technology (L)	7.00	-0.19	-2.6
XLNX	33.63	18.00	Xilinx	38.38	1.06	3.0
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ADPT	63.25	10.19	Adaptec Inc	11.56	0.81	7.8
APCC	37.69	22.13	American Power Conversion (H)	36.13	3.25	9.9
ANDA	2.81	0.88	Andataco Inc	0.75	0.00	0.0
CREAF	29.00	8.00	Creative Technology Ltd.	9.44	0.08	8.9
RACL	9.75	0.90	Data Race Inc	1.41	-0.19	10.0
DTM	19.00	7.00	Dataram Corp	11.63	-0.50	-4.1
EMC	59.44	25.88	EMC Corp	35.38	1.10	2.5
EMLX	10.75	5.31	Emulex Corp	11.00	0.38	3.5
ESCC	35.88	13.75	Evans and Sutherland	14.25	-0.38	-2.8
EXBT	12.75	5.00	Exabyte	5.06	-0.50	-9.0
IISFD	4.88	0.38	Intelligent Info. Systems	0.47	-0.22	-31.8
IOMG	16.75	5.44	Iomega Corp	4.12	0.38	10.0
KMAG	25.75	2.25	Komag Inc	2.94	-0.08	2.1
MTSI	31.00	11.00	MicroTouch Systems Inc	12.00	0.18	1.2
MTIC	17.88	1.51	MTI Technology Corp	4.00	-0.06	1.1
AQM	21.00	2.25	QMS Inc	2.00	-0.06	-3.0
QNTM	43.25	18.81	Quantum Corp	15.25	-0.31	-2.0
RDUS	7.50	1.13	Radius Inc	1.88	0.13	10.6
SEG	40.63	16.13	Seagate Technology	22.69	0.31	1.4
SOS	12.00	2.44	Storage Computer Corp	1.00	0.00	0.1
STK	91.13	21.00	Storage Technology (L)	22.31	-5.19	-18.9
TEK	38.19	15.38	Tektronix Inc	17.00	0.75	4.3
WDC	50.88	8.00	Western Digital Corp	10.48	0.00	0.0
XRX	116.00	65.19	Xerox Corp	88.66	1.36	1.9
[illegible]						
AMSY	34.00	18.25	American Mgmt. Systems	30.81	1.28	4.3
ANLY	38.38	20.00	Analysts Int'l	33.00	2.31	6.7
AUD	75.88	46.88	Auto Data Processing	73.00	1.80	2.5
CATP	58.38	24.88	Cambridge Tech. Partners	29.00	2.88	10.6
CEN	80.40	50.75	Ceridian Corp	58.88	0.88	0.9
CDO	23.25	12.38	Comdisco Inc.	14.38	0.31	1.6
CPU	38.00	11.25	CompUSA Inc	18.38	-0.38	-2.1
CHRZ	51.00	20.00	Computer Horizons	27.11	0.94	3.6
CSC	70.00	35.63	Computer Sciences	61.13	0.25	0.4
TSK	46.25	23.00	Computer Task Group	26.56	-1.81	-6.4
EGGS	25.13	5.38	Egghead Discount Software	8.56	0.38	5.4
EDS	48.88	29.38	Electronic Data Systems Corp	35.13	1.31	3.6
ICO	39.69	15.63	Inacom Corp (L)	17.25	-2.50	-12.7
KEA	60.94	24.00	Keane Inc	40.06	0.94	2.1
MICA	29.25	10.06	MicroAge Inc.	13.00	0.88	7.2
PAYX	45.13	22.44	Paychex (H)	44.50	4.88	0.6
PMS	38.38	29.00	Policy Management Sys.	42.94	-0.88	-2.0
REY	24.00	12.63	Reynolds and Reynolds	14.44	0.75	5.5
SAPE	67.00	23.88	Sapient Corp	37.63	-4.75	11.3
SCBI	14.75	6.38	SCB Computer Tech. Inc	6.75	-0.44	-6.1
SEIC	80.50	31.06	SEI Corp	68.41	-0.34	-0.5
SMS	86.50	31.88	Shared Medical Systems	55.13	0.81	1.6
SSPE	20.25	10.75	Software Spectrum Inc.	15.25	0.38	2.5
SDS	30.00	22.44	SunGard Data Systems	24.13	2.44	7.6
SYNT	30.88	5.69	Syntel, Inc	10.81	1.94	11.[illegible]
VST	16.19	7.13	VanStar Corp	9.81	1.19	13.6

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

ABC Technologies, Inc. 57
Aberdeen Group, Inc. 18, 49, 61
Acer America Corp. 62
Acta Technology, Inc. 57
Adaptec Corp. 49
Adobe Systems, Inc. 30
Advertising Research Foundation 20
Alaska Airlines 16
Amazon.com, Inc. 101
Amdahl Corp. 61
America Online, Inc. 8
American Express Travel Services 45
AMR Research, Inc. 20
Apple Computer, Inc. 8, 34
Arthur Andersen & Co. 101
Association of Internet Professionals 81
AT&T Corp. 4, 81
Atco Rubber Products, Inc. 4
Atlanta Convention & Visitors Bureau 51
Atlantic Community College 86
Aurora Technologies, Inc. 62
AvantGo, Inc. 10
Banc One Corp. 45
BankAmerica Corp. 67
Bankers Trust Co. 16
Barnesandnoble.com 101
Bay Networks, Inc. 24, 49
BCTel Mobility 14
Benchmarking Partners, Inc. 57
Bethart Printing Services 51
Blockbuster Entertainment Group 4
Blue Cross/Blue Shield of Rhode Island 18
Bluestone Software, Inc. 86
Boca Research, Inc. 55
Boise Cascade Office Products Corp. 1
Brewers Retail, Inc. 18
Brielle Executive Gifts 45
BTNY Services, Inc. 16
Burton Snowboards 67
Business Objects SA 67
Cable News Network 49
Cabletron Systems, Inc. 24
Cahners In-Stat Group 6
Caldera, Inc. 34
California Department of General Services 14
Cap Ventures, Inc. 51
Capital One Financial Services Corp. 70
Carnegie Mellon University 78
CBS Corp. 49
Charles Schwab & Co. 70
Children's Hospital 24
Church & Dwight Co. 57
Cisco Systems, Inc. 24, 51
Citrix Corp. 14
Citrix Systems, Inc. 55
Claridge Casino Hotel 86
Clarify, Inc. 49
CNN Interactive 6
Cognos, Inc. 67
College of Healthcare Information Management Executives 51
Comdisco, Inc. 45
Commerce One 24
Commercial Financial Services, Inc. 1
Compaq Computer Corp. 4, 6, 8, 51
CompuBank N.A. 101
Computer Based Solutions, Inc. 101
Computer Science Corp. 1
Consolidated Edison Company of New York, Inc. 70
Continental Grain Co. 6
Corsoft Corp. 49
Credit Financial Services, Inc. 61
Cromwell Foote Partners LLC 81
Cubus Corp. 57
D. L. Sears & Associates, Inc. 86
DAK Systems Consulting 51
Data General Corp. 61
Datacom Technology Group, Inc. 4
Dataquest 14, 34, 51, 61
Decisionism, Inc. 67
DecisionOne Corp. 45
Dell Computer Corp. 51, 57, 101
Deloitte & Touche LLP 57
Destiny Software Corp. 45
Digital Equipment Corp. 8
Diners Club International 101
Dow Chemical Co. 67
Du Pont External Affairs 1
Eastern Acoustic Works 81
Eastman Kodak Corp. 24
Electronic Data Systems Corp. 12
Electronic Freedom Foundation 12
Elderhostel 101
EMC Corp. 14, 45
Ernst & Young LLP 70
Exabyte Corp. 62
Fastwater LLP 24
Federal Bureau of Investigation 6, 12, 72
Federal Communications Commission 12
Federal Express Corp. 4, 8, 10, 45, 57
Federal Transit Administration 72
First USA, Inc. 45
Fletcher Jones Motor Cars 4
Ford Motor Co. 1, 101
Forrester Research, Inc. 4, 34
Fujitsu Ltd. 61
FullTime Software, Inc. 14
Gap, Inc. 14
Gartner Group, Inc. 1, 4, 8, 49, 81
GATX Capital Corp. 57
General Electric Co. 98
General Mills, Inc. 1
Giga Information Group 45, 61, 81
Gifford Securities, Inc. 98
Gleason Corp. 1
Harris Corp. 14
Hewlett-Packard Co. 4, 12, 49, 51, 101
Hitachi Computer Products (America), Inc. 101
Hoffman-La Roche, Inc. 1
Howrey & Simon 8
Hurwitz Group, Inc. 1
Hyperion Solution Corp. 67
IBM 4, 8, 12, 16, 18, 37, 45, 49, 51, 63, 101
Imperial Credit Industries, Inc. 51
Information Corp. 67
Information Systems Security Association 70
Informix Corp. 57, 67
Infowave Wireless Messaging 49
Insurance Holdings of America 24
Integrated Technologies Management Corp. 45
Intel Corp. 4, 8, 16, 51, 61, 82
IntelliCorp, Inc. 57
IntelliQuest Information Group, Inc. 20
Intensity Corp. 24
Intergraph Corp. 62
International Computer Security Association, Inc. 51
International Customer Service Association 1
International Data Corp. 8, 10, 14, 20, 34, 51
International Data Group 101
Intrepid Systems, Inc. 57
IP Metrix 51
J. D. Edwards & Co. 18
J. D. Power and Associates 4
[illegible], Inc. 102
JetForm Corp. 49
John Hancock Mutual Life Insurance Co. 1
Johnson & Johnson 101
Jupiter Communications, Inc. 78
Knight-Ridder New Media 6
Korean Air 12
KPMG Peat Marwick LLP 57, 100
LANart Corp. 55
Lazard Freres & Co. 81
Library of Congress 49
Lockheed Martin Corp. 101
Lotus Development Corp. 8, 100
[illegible], Inc. 61
Manugistics, Inc. 20, 57
MasterCard International, Inc. 101
MCI WorldCom, Inc. 12
Mercedes-Benz of North America 4
Meta Group, Inc. 45
MicroDesign Resources 16
Microsoft Corp. 6, 8, 12, 14, 16, 34, 37, 40, 49, 51, 57, 67, 75, 98, 101
Mips Technologies, Inc. 6
Motorola, Inc. 49
MSNBC 49
Multi-Tech Systems, Inc. 62
MWI Veterinary Supply Co. 45
Nasdaq Stock Market, Inc. 16
National Association of Manufacturers 24
National Association of Securities Dealers 45
National Broadcasting Corp. 49
National Security Agency 8, 12
NationsBank Corp. 67
NCR Corp. 67
Netscape Communications Corp. 12, 16, 75, 101
Network Solutions, Inc. 12
New Era of Networks, Inc. 18
New York Mayor's Office 51
Nielsen Media Research 20, 60
Nordstrom, Inc. 45
Novell, Inc. 51
NSI Software, Inc. 51
Oberon Software, Inc. 18
Oracle Corp. 8, 10, 12, 20, 37, 49, 57, 67
Pacific Gas & Electric Co. 24
Patent and Trademark Office 72
Patricia Seybold Group 57
PeopleSoft, Inc. 49, 100
Philadelphia Stock Exchange 45
PhotoDisc, Inc. 101
Platinum Software Corp. 4
President's Council on Year 2000 Conversion 24
PricewaterhouseCoopers 86
Procter & Gamble Co. 20
Proctor Hospital 78
[illegible], Inc. 45
QSP, Inc. 45
Rainbow Apparel Co. 8
RealNetworks, Inc. 8, 12
Red Hat Software, Inc. 34
Renaissance Worldwide, Inc. 8, 51
Research and Planning, Inc. 67
RichFood Holdings, Inc. 51
Riverwood International Corp. 1, 20
RoweCom 101
Royal Bank of Canada 101
SafetyNet, Inc. 51
Sagent Technology, Inc. 67
Samsung Electronics Co. 61
San Jose Mercury News 6
Santa Cruz Operation, Inc. 4
SAP AG 1, 14, 20, 24, 28, 49, 57, 67
Securities Exchange Commission 24
Security First Network Bank 101
Seek Consulting, Inc. 4
[illegible] Corp. 1
Service Merchandise Company, Inc. 57
Siemens Nixdorf Information Systems, Inc. 57
Silicon Graphics, Inc. 6
Software Productivity Research 98
Standard & Poor's DRI 98
Stanford University 45, 67
Starfish Software, Inc. 51
Stirling Douglas Group, Inc. 67
Storage Technology Corp. 61
Strategic Research Corp. 14
Sun Microsystems 4, 8, 34, 49, 51, 61
SunAmerica Life Insurance Co. 100
SunGard Data Systems, Inc. 45
Sunterra Resorts 14
SunTrust Banks, Inc. 70
Synchrologic, Inc. 61
The [illegible] Co. 49
The Chase Manhattan Corp. 1
The Hackett Group 75
The Hartford Financial Services Group, Inc. 81
The Home Depot, Inc. 49
The Immigration and Naturalization Service 86
The Knowledge Company 86
The Miami Herald 6
The New York Times 6
The New York Times Electronic Media Co. 6
The Yankee Group 6, 12
Tibco, Inc. 49
Transamerica Corp. 61
Trinity Medical Center 51
TRW, Inc. 14
U.S. Coast Guard 72
U.S. Commerce Department 6, 12
U.S. Department of Justice 49
U.S. Navy 72
UC Card/MasterCard 101
United Parcel Service of America, Inc. 45
United Sugars Corp. 1
University of California at Berkeley Graduate School of Journalism 6
University of Helsinki 34
University of Pittsburgh 78
University of Texas at Austin 78
University of Virginia 78
USA Group, Inc. 70
USWeb Corp. 101
[illegible] Systems, Inc. 24
Veritas Software Corp. 14
Vinca Corp. 14
Visa International Service Association 6
Warner-Lambert Co. 1
WRQ, Inc. 16
Xerox Corp. 51

SAP pricing picture still unclear

CONTINUED FROM PAGE 1

pricing for a new series of applications that extend the firm's product reach beyond the back-office realm of R/3. But details about the new scheme and how it will affect users were absent.

SAP also promised to jazz up its user interfaces and make R/3 less complicated to master — and even "fun," in Plattner's words. However, he didn't specify when R/3 users will actually see an improved user interface, telling attendees it could be "a year or two years from now" before SAP is where it wants to be.

The lack of firm details about the pricing changes in particular made it hard for users and analysts at Sapphire to judge what SAP has in mind.

But some users applauded the basic idea, which boils down to selling bundles of applications that map to how different workers do their jobs.

That could "make pricing more realistic to the way the software is used," said Robert Betts, director of global information systems at Riverwood International Corp., an Atlanta-based paperboard maker that is installing R/3 plus SAP'a new planning and data warehousing applications (see related story, page 20).

The new approach "sounds much more practical than having to buy each piece individually," said Karen Peterson, manager of business process planning at Lucent Technologies, Inc.'a power supply divisioo in Mesquite. Tex., which is also getting ready to roll out R/3.

Paying SAP'a current prices for each application "could become exorbitant when you get to the occasional users" in departments such aa sales, marketing and logistics planning, Peterson added.

TOO PRICEY

R/3 pricing is based on the number of users registered for each piece of the software, and Plattner said that isn't likely to change. But the R/3 approach — which also classifies users into four different categories — would price SAP's new beyond-the-back-office applications out of the market in departments such as marketing, sales and supply-chain planning, he added.

Instead, the company plans to put together bundles of application modules based on "business scenarios" that describe the software tools that different workers need to do their jobs. Per-user prices will then be set for the whole bundle, Plattner said.

But Kevin McKay, CEO of Wayne, Pa.-based SAP America, Inc., said it will take "a couple months of hard work" to finalize the new packaging and pricing plan. SAP executives don't even know yet how many different business scenarios are needed; Plattner estimated the number could be as high as 20.

"They've got the atory, but they don't have everything figured out yet," said Steve Bonadio, a packaged software analyst at Hurwitz Group, Inc. in Framingham, Mass.

On the user interface front, SAP ia working with graphic designers to come up with less stodgy screens that are more user-configurable than R/3 is now. It also is trying to reduce the amount of drilling down through multiple screena that users have to do to complete even simple tasks, Plattner said.

For users, making R/3 less difficult to use could mean lower training costs.

Gleason Corp., a Rochester, N.Y., manufacturer of gear-making equipment, is looking at rolling out R/3 to about 1,100 users. Being able to minimize training "would save us one heck of a big amount of money," said Wayne Parrish, a senior staff technical analyst at Gleason.□

CHANGES IN THE WIND

Initiatives SAP is working on include:

- **Software packaging based on "scenarios" of what users do**
- **New pricing formulas that fit various packages**
- **More visually appealing and flexible interfaces**
- **Frame-based "cockpit" interfaces tailored for different users**
- **Streamlined applications that have fewer steps**

R/3 complexity stymies users

The complexity of using R/3 has long been a cause of grumbling among SAP customers.

For example, a group of 15 business users involved in selecting packaged applications for SunAmerica Life Insurance Co. voted in favor of buying PeopleSoft, Inc.'s financial software because it looked friendlier than R/3.

"PeopleSoft is very appealing when you look at the screens, while [R/3] looked rigid the way it's delivered out of the box," said Roy Nakabara, vice president of cash services at SunAmerica's annuity unit.

But SunAmerica's information technology department thought R/3 was technically superior, and the Los Angeles-based company eventually decided to go with SAP, said Nakabara, who is managing the application rollout. A mix of finance-oriented R/3 modules is due to go into use at SunAmerica in October.

Charles Burns, the head of KPMG Peat Marwick LLP's SAP consulting operation in Radnor, Pa., said more than half of his unit's projects include development work to mask R/3's complexity from users. "If you have to go three screens deep into an application just to change a [financial] measurement, that can intimidate people," Burns said.

Even inside SAP, "the feedback is that not as *many* people as we expected are using R/3," said CEO Hasso Plattner. Managers often "delegate it to someone else because [the software] is not convenient enough," he added. — Craig Stedman

ERP can hit service

CONTINUED FROM PAGE 1

ahared among several departments, users said.

In addition, the complex application interfaces of ERP systems have resulted in steep learning curves for workers in customer service. For example, Du Pont External Affairs io Wilmington, Del., is in the midst of an R/3 rollout but is developing a customized user interface to the software that will make it easier for customer service representatives — and eventually customers — to navigate, said Jim Sinex, manager of customer care services.

Companies that use the interfaces unchanged face a long training period. Pharmaceutical giant Warner-Lambert Co. in Morris Plains, N.J., trained its customer service representatives for six months on its new R/3 system. During that time, the company had to hire extra employees to cover for workers in training classes.

Using "some of these packages [is] about as tough as finding a book in the Library of Congress" without a good index, said Marty Light, a customer service manager at Seicor Corp., a Hickory, N.C., maker of fiber-optic products.

Customer service professionals said ERP systems will greatly improve customer service over time, and the World Wide Web will be key. Several companies said they will eventually give customers direct access to data stored in ERP systems via the Web. That will let customers order products, check ahipments and review inventory without the assistance of a customer service representative.

But before they can do that, companies need to solve the usability and performance issues of ERP systems, attendees said. In addition to customized user interfaces, some have built data extracts for their customer service departments, which let employees and customers query smaller, faster databases.

For example, a company can construct a Web-based catalog that is actually an extract of its entire inventory, explained Mike Bauer, a partner at Computer Science Corp., a consulting firm in Plano, Texas. Those data extracts would yield quick answers and could be updated weekly or even daily, Bauer said.

ERP systems may also have ao impact on the job descriptions of customer service staff. That was the case at General Mills. Inc. in Minneapolis, which has been running R/3 for about four years. Installing the system has resulted in multifunctional customer service representatives. Those workers now get involved in everything from order-taking to accounting because they can access so much customer data, according to Cindy Hulett, a customer service manager.

Users said they also are grappling with how to integrate ERP systems with legacy customer service systems and are facing frustrating delays until their companies fix those connections between old and new.□

MOREONLINE

For online customer service resources, such as organizations and publications, visit *Computerworld online.*

www.computerworld.com/more

Lotus releases Notes public beta

By Roberta Fusaro

USERS WHO HAVE been anticipating Release 5.0 of Lotus Notes and Domino next quarter won't be disappointed, despite a delay in the public beta versioo, company officials said.

Cambridge, Mass.-based Lotus Development Corp. last week posted on its World Wide Web site the first public beta of Release 5.0 of its Lotus Notes collaboration software, Domino server and Domino Designer development environment. The beta versions are at *www.lotus.com/r5preview/*.

The public beta of Notes 5.0 was originally due at the end of last month but was delayed a few weeks. Officials and users at that time said they weren't sure if the delay would keep Lotus from meeting its fourth-quarter shipping target. But Lotus spokesmen said they are confident the product will ahip late in the fourth quarter. Pricing will be announced then.

Product designers took the extra time to tweak the messaging software'a new user interface, which boasts a browser look and feel, spokesmen said.

Among the new features in Notes 5.0 and Domino 5.0 are enhanced navigatioo, including window tabs that will make it easier for users to find frequently used information. Domino 5.0 also has a native Lightweight Directory Access Protocol Version 3 directory. The two new versions also will offer fail-over and load-balancing support for browsers to facilitate work over the Web.□

Supply chains

CONTINUED FROM PAGE 1

buying goods online have tended to want to host supplier catalogs within their corporate firewalls to maintain a greater level of control of what their end users see and search in a familiar format, analysts said.

John Hancock Mutual Life Insurance Co., for instance, is hosting its supplier catalogs internally to ensure accurate, contracted pricing throughout the entire workflow process, said Roy Anderson, director of corporate purchasing at the insurance company. That lets managers add or change items without having to go over the Internet and control end users' response time, he said.

"As OBI develops, I'll use it more and more to meet my needs, but it's not a panacea," Anderson added.

Hoffman-La Roche, Inc., on the other hand, has no plans to maintain supplier catalogs. The international pharmaceutical company, whose U.S. headquarters is in Nutley, N.J., had been hosting catalogs within its legacy system.

But price-field updates sometimes lagged, and then errors between purchase orders and invoices had to be resolved, said electronic-commerce project manager Melissa Campbell.

For its initial OBI pilot, Hoffman-La Roche is targeting eight suppliers that sell office and laboratory supplies, hardware and software and provide temporary help. With 3 million stock-keeping units of information among the suppliers, that would have translated to 12 to 15 servers at a cost of $50,000 to $60,000 apiece to host the information internally — never mind the maintenance, Campbell said. "Because of the cost, our organization said, 'No way,' " she said.

THIRD-PARTY HOSTS

Yet another option exists for many companies. They can hire a third party to host their catalogs — or let preferred suppliers host them and do the processing of purchase orders and approvals.

Boise Cascade Office Products Corp., for instance, will manage all the business rules — including maximum order amount and approval processes — for customers that want to order over the Internet but don't want the hassle and expense of setting up a purchasing system.

The Itasca, Ill.-based supplier has about 3,000 customers using its homegrown Internet purchasing system and just four customers pilot-testing OBI, said Terry Pavone, manager of emerging technologies.

But because the customers asking for OBI, including The Chase Manhattan Corp., are of significant size, Boise Cascade couldn't ignore the evolving standard. "We're going to provide our customers with whatever ordering mechanism they want to use," Pavone said.

Whether OBI will save the company money is another matter. "Unless OBI becomes a standard that everyone supports, we still have to support every ordering method that's available," Pavone said.

But any electronic system is better than the paper-, fax- or telephone-based approach. Two years ago, Boise Cascade estimated savings of 40 cents per line with electronic purchase orders compared with those other methods. □

FAQ: Open Buying on the Internet

What is OBI?

A standard meant to facilitate business-to-business Internet commerce for high-volume, low-dollar goods and services such as office and lab supplies, computer equipment, temporary help and other indirect materials not involved in the production process.

What technology does OBI incorporate?

For order requests and orders: The American National Standards Institute's x.12.850 purchase order format. For order transmission: Hypertext Transport Protocol 1.0 using Secure Sockets Layer (SSL) for encryption of the data. For digital signatures: Netscape's SSL, RSA's BSafe and Microsoft's Crypto API. For public key certificates: x.509.

Why is OBI important?

A buying company can place orders with a selling company without having to make any proprietary adjustments to their respective software systems. Without OBI, the software packages on the buying and selling sides don't interoperate.

Who maintains the standard?

The OBI Consortium, which has 62 members, including Ford Motor Co., Johnson & Johnson, Lockheed Martin Corp. and MasterCard International, Inc. Various software vendors are also members, including Dell Computer Corp., IBM, Microsoft Corp. and Netscape Communications Corp.

When was the OBI standard finalized?

Version 1.0 became a standard last May, and Version 1.1 was finalized in June.

Start-up enters crowded Web banking field

By Robert L. Scheier

IT'S GETTING harder to stand out among the online banks crowding the World Wide Web.

CompuBank N.A., a Houston-based start-up, is touting itself as the first nationally chartered bank to operate exclusively on the Web. But rivals and analysts said the Internet bank isn't offering anything dramatically different from what other banks offer, either over the Web or over a teller's counter.

When it goes live in a few weeks, CompuBank plans to win customers with a combination of low price and useful features, said Jonathan Lack, executive vice president at the bank. For example, CompuBank will offer basic checking accounts for no monthly fee and with no minimum balance required, as well as unlimited electronic bill payments for $5.50 per month.

Unlike some other online banks, Lack said, CompuBank will offer customers real-time information about their accounts rather than information that might be hours old because it was delivered in batch mode.

And though many traditional banks require special software to bank online, CompuBank will be accessible from any browser that supports 128-bit encryption, such as Navigator 2.0 or higher or Internet Explorer 3.0 or higher.

But CompuBank faces an increasingly crowded market. A survey of 1,000 financial services companies conducted by Internet services company USWeb Corp. in Santa Clara, Calif., showed that 93% plan at least some Web development in the next few years.

Some Web bank pioneers also have stumbled. Security First Network Bank, which claims that it was the first Web-only national bank, lost $689,000 last year and has attracted only 14,000 retail customers since opening for business in 1995. □

Bookseller bolsters intranet service

By Sharon Machlis

BEST KNOWN for its battle with Internet giant Amazon.com over consumer book buyers, Barnesandnoble.com is expanding its offerings in the business-to-business space.

At this week's Internet Commerce Expo (ICE) in Los Angeles (*www.icexpo.com*), Barnesandnoble.com will demonstrate a major upgrade to its 2-month-old intranet bookselling service. Also expected at ICE: Hitachi Computer Products (America), Inc. will debut its TradeLink electronic-commerce software suite in the U.S., and AT&T will offer new electronic data interchange-related messaging services for corporate extranets.

ICE SHOW

The Barnesandnoble.com service will now include subscriptions to more than 42,000 newspapers and magazines, along with the books already offered. The publications will be sold through a partnership with electronic-commerce subscription vendor RoweCom in Cambridge, Mass. RoweCom also will add direct account debiting and detailed financial reporting to corporate users. The latter is aimed at better tracking company expenditures on books and publications.

Barnesandnoble.com has signed up about 25 corporate customers in the service's first two months, according to Michael Donahue, director of business solutions. Customers use specially developed tools to create links from their intranets to the Barnesandnoble.com business site and can put up specific titles for their employees to see.

"It's very easy," said Mark Miller, executive editor for Arthur Andersen & Co.'s Knowledge Space World Wide Web site. "It gives enhanced value to our users — quick and easy access to books."

Hitachi, with U.S. headquarters in Waltham, Mass., will give its first public U.S. viewing of its electronic-commerce software already in use in Japan. About 50 to 60 large corporate customers have installed it, including Diners Club International and UC Card/ MasterCard there. The software includes modules for tapping into mainframes and SAP systems in real time.

Also at the show, Hewlett-Packard Co. is slated to announce an upgrade to its Changengine software package unveiled in July. Changengine was designed to aid development of software modules for various tasks, such as adding control and audit capabilities to existing applications.

ICE runs Wednesday through Friday at the Los Angeles Convention Center. It is sponsored by a division of International Data Group, *Computerworld*'s parent company. □

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The Back Page

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Dispat s & age om th inges of th lect fro ier

STRETCH ONE-TWO-THREE

Millennium madness

Crooner Pat Boone has taken a break from his brief fling with heavy metal to support a new cause: raising awareness of the year 2000 problem. Boone recorded a public service announcement (which radio stations can download from *www.y2knet.com*) that offers a free information kit to help families prepare for the millennium bug.

A public opinion poll says 68% of Americans are ignorant of the year 2000 problem. And, when it is described to them, 54% said they aren't afraid because they figure it will be fixed in time. The poll was sponsored by developers of yet another Web site devoted to year 2000 information (*www.y2ktoday.com*).

In response to customer requests, PhotoDisc, Inc. in Seattle is offering a CD-ROM of stock photos depicting the new millennium. The images include a crystal ball, hourglass, clocks, calendars, time bombs and PC screens with explosions. How original.

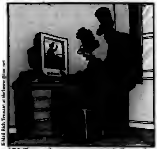
TOP 5

This year's back-to-school essentials, ranked by college students:

1. Laptop computer
2. Calculator
3. Radio/stereo
4. Television
5. Wireless phone

Source: Survey by Market Directions, Inc., New Castle, Pa., and Sprint PCS, Kansas City, Mo.

THE FIFTH WAVE *by Rich Tennant*


E-Mail Rich Tennant at the5wave@tiac.net

"If I'm not gaining weight, then why does this digital image take up 3MB more memory than a comparable one taken six months ago?"

Inside Lines

You mean not just for the sex?

Microsoft poked fun at itself last week during a kiss-and-make-up speech at the Software Publishers Association's annual conference. Ted Nielsen, head of developer relations at Microsoft, opened a keynote with the "Top 10 lists I considered for today's Top 10 list." Self-deprecating — and darn funny — items included "Top 10 state attorneys general upset with Microsoft right now" and "Top 10 reasons Ralph Nader is an advocate for computer users." But most timely, given the latest anti-Microsoft outburst from Sen. Orrin Hatch (R-Utah), was Nielsen's nod to Washington: "Top 10 motivators for software companies to get more involved in politics."

There's a reason they write software

Songwriter Johnny Mercer must have been rolling over in his grave last week after someone at SAP AG rewrote Mercer's "Hooray for Hollywood" for the razzle-dazzle entertainment portion of CEO Hasso Plattner's keynote speech at Sapphire '98 in Los Angeles. A sample of SAP's version (which was backed up with indoor fireworks and an 18-member chorus line): "We really want you to join the spirit/Let everyone hear it/We all are partners and friends./The message we are sending/Has a happy ending/Sapphire's in Hollywood." Afterward, Plattner promised — three times — that SAP will make its software "look every bit as good as the girls" in the dance troupe.

No really, get outta here!

The Federal Trade Commission (FTC) for the first time is about to ban a huckster from the Internet for life. Craig Lee Hare, a Lake Worth, Fla., man who ran an online site auctioning computers, collected the money but never quite managed to deliver the goods to "successful" bidders. Hare will stay out of jail, but he'll never again be allowed to advertise, market or sell goods or services via the Internet, according to a settlement reached with the FTC in a Florida federal court.

And how sophisticated is that, exactly?

Is this the end for plaid sports jackets? A J. D. Power and Associates study released last week revealed that 25% of all new vehicle buyers use the Internet to get product and pricing data during the shopping process. "Consumers surfing the Internet for information related to an auto purchase could in one hour become more informed about a particular vehicle line than the most sophisticated salesperson," according to Chris Denove, J. D. Power's director of consulting operations.

Overheard . . .

After hackers wreaked havoc with *The New York Times* Web site last week, one competitor wasn't impressed, grumbling, "You'd think they'd really do something like grab the answers to that damned crossword puzzle. Now that would have been something." . . . Sen. Orrin Hatch at David Coursey's Upside Summit, on Bill Clinton: "That jerk." . . . Oracle CEO Larry Ellison at a press conference last week, on Bill Gates: "The Pope of Personal Computing." . . . Ellison on himself: "Hopefully not [the] John Calvin" of computing. . . . At a customer service conference last week in Seattle during a session on How to Open up Your Company to Customers via the Web: "If it was up to IT, we wouldn't publish our telephone number."

If the bell bottoms, Brady Bunch movies and new VW Beetles haven't tipped you off that the U.S. has fallen into a cultural time warp back to the '70s, the latest marketing nugget from Inktomi Corp. just might. To show how hip an upcoming San Jose, Calif., reception will be, the company sent out what appear to be Pet Rocks inscribed "Inktomi ROCKS." Groovy. News editor Patricia Keefe has cleared the eight-track tapes and Lava Lights off her desk, so she's ready to disco to your news tips and tidbits. Send news tips and tidbits to her at patricia_keefe@cw.com or call (508) 820-8183.

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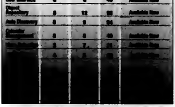

	# of Developers	Develop Time (mos.)	Person Mos.	With TNG Framework
2-D and 3-D User Interface	8	8	40	Available Now
Object Repository	8	12	96	Available Now
Auto Discovery	6	9	54	Available Now
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[illegible]	3	7	21	Available Now
[illegible]	4	5	[illegible]	[illegible]

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